

Consultative Group on International Agricultural Research



CGIAR

Study Paper Number 27

Governance and Management of the CGIAR Centers

Selcuk Ozgediz



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**Governance and Management
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Selcuk Ozgediz

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At its annual meeting in November 1983 the Consultative Group on International Agricultural Research (CGIAR) commissioned a wide-ranging impact study of the results of the activities of the international agricultural research organizations under its sponsorship. An Advisory Committee was appointed to oversee the study and to present the principal findings at the annual meetings of the CGIAR in October 1985. The impact study director was given responsibility for preparing the main report and commissioning a series of papers on particular research issues and on the work of the centers in selected countries. This paper is one of that series.

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SUMMARY

The CGIAR is a remarkably successful institutional innovation in international research and development.¹ Its impact on world agriculture and contributions to the "Green Revolution" of the 1960s and 1970s are well documented. The CGIAR derives its success, first and foremost, from the success of the individual centers that make up the System. The centers' effectiveness and efficiency in terms of the outputs of their programs has depended on how well they were managed.

The CGIAR centers operate² in unique environments and face complex management challenges. The special circumstances and peculiar characteristics of the centers which have a bearing on their management include the following:

- The CGIAR centers are international institutions operating in many developing countries and are staffed by persons with different cultural backgrounds. This introduces complexities in managing people and coordinating activities not found in organizations in single, mono-culture environments.
- The centers are autonomous in their management, but are subjected to oversight by the CGIAR. The demands for transparency of operations, justification of activities and spending plans, and for accountability are considerable and increasing.
- The centers have a unique governance system, unlike that found in other non-profit organizations. The boards have policymaking and oversight responsibilities similar to those found in other organizations, but their modes of operation are different.
- In strictest terms, the centers have only a one year "lease on life" because their funding is determined on a year-to-year basis. Also, their funding comes from a number of bilateral sources, necessitating constant (and vigilant) attention to donor and public relations.
- The main business of the centers is research. To be successful, they need an institutional environment conducive to innovation and creativity.
- Most of the centers operate in difficult socio-political environments. Also, high quality physical and administrative infrastructures that are often taken for

1 See Annex 1 for an overview of the Consultative Group on International Agricultural Research (CGIAR).

2 See Annex 2 for an overview of the CGIAR centers.

granted in developed countries do not exist in most of the countries in which the centers work.

Purpose and Methodology

The primary purpose of this study is to provide an overview of the current state of management in the CGIAR centers. System management issues are not discussed. This is a personal paper, as compared with a Secretariat report, based on an across the System analysis of center strengths, weaknesses, challenges and opportunities in the area of center management. The intended audience is donors and cosponsors of the CGIAR, center boards and managements and others in the wider research and development community interested in learning from the CGIAR's experience.

The centers' overall effectiveness, as measured by their outputs and impact, is not discussed. Instead, the focus is on their "management effectiveness," i.e., the extent to which the centers' management philosophy, systems, policies and practices facilitate or constrain attainment of desired results.

The primary sources used in conducting the study are the eighteen External Management Reviews (EMRs) of individual centers conducted since 1983.³ The EMRs were initiated by the CGIAR to complement an ongoing system of periodic reviews of the centers' programs and were each conducted by a separate international panel of experts.⁴ Updating of the information in the old EMR reports is based on my personal impression of the changes made by the centers in their internal management following their EMRs.

Choice of the management factors studied is based on a conceptual framework developed for studying management at the centers. This framework (illustrated in Figure 1, Chapter 1) attempts to capture the unique characteristics and challenges of management at the centers and draws on the current thinking in the management literature on the determinants of organizational performance. Annex 4 is devoted to a detailed description of the conceptual framework.

The framework has five interrelated components: center guidance, management of resources, management of tasks, institutional environment and management skills and teamwork. In addition, it encompasses four crosscutting organizational attributes (adaptability, accountability, efficiency and innovation) as a derivative of the five components. Key features of the conceptual framework and the main conclusions and recommendations of the study are summarized below.

3 See Annex 3 for a list of the eighteen External Management Reviews (EMRs).

4 See Annex 5 for background information on the general content and process of EMRs.

Center Guidance

By "center guidance" we refer to management factors that describe how a center gives purpose and direction to its activities and determines the broad policies that shape the actions of its management and staff. Four major factors are explicitly recognized: guiding values, governance, leadership and strategy.

Guiding values. In studying the centers' guiding values the principal interest has been in the core values that are widely shared and in reality guide the actions of its staff. These usually include values that define what the center stands for and its beliefs on how it can accomplish its mission, both in terms of technical matters and in human resources and relationships. Guiding values sit at the core of a center's strategy.

The study shows that the centers have been placing increasing emphasis on guiding values and principles. This is an encouraging sign. The program philosophy of many centers is relatively clear. Recent efforts in strategic planning and internal management reviews have helped in the clarification of values and reinforced the centers' client orientation. Internal forces, in particular the values of the director, have been more important than external forces in shaping a center's guiding values. There is need in many centers to clarify some of their institutional values, particularly in areas such as risk taking and innovation, efficiency and management of human resources.

Governance. This is one of the least appreciated aspects of management in the CGIAR centers. The initial boards in the System were patterned after the governance mechanism used by the foundations which created them. The broad pattern that emerged with the formation of the CGIAR maintained many of the features of the foundation-led boards. Foundation members were replaced with CGIAR nominees, with selection done by the board itself. Members were chosen on a personal basis, not as representatives of their institutions. This helped insulate the centers from political pressure. Boards became largely "self accountable."

The CGIAR center boards have three main functions: to appoint or dismiss the director to formulate policy for the center and to oversee the implementation of the center's strategies and policies by the management.

There has been a marked improvement in recent years in the way the boards manage their affairs. In the area of policymaking, most boards still play a reactive role. Many boards have improved their oversight of programs and management. The centers remain largely director led, rather than board led.

Boards can further improve their effectiveness by operating at a higher strategic level, better planning their workload and membership and adjusting the number of meetings to the

requirements at hand. Improving board membership remains a critical need. The manner in which CGIAR nominees are identified and appointed needs rethinking. Some centers can benefit from interlocking board memberships.

Consideration of a broader structural reform on center governance could be part of the current examination of the non-associated centers by the CGIAR and of the options on the organizational structure of the System. The one-tier board model has served the centers well. Two-tier models could be considered if further strategic and structural changes are contemplated in the work of the existing centers.

Leadership. The center directors play a crucial role in guiding a center. Perhaps more than any other personal attribute, effective guidance depends on the director's leadership ability. The stress on leadership is perhaps more important in the CGIAR than in many other institutions because of the nature of the centers' main business (research leading to innovation) and the complexity of the context in which the centers operate (e.g., internationality, relative isolation, funding uncertainties, occasional shifts in system priorities).

The evidence from the EMRs shows that directors of CGIAR centers are in full control of their institutions. Some of the directors are excellent leaders, and some are excellent managers. Most of the directors exhibit strong "directive behavior" (i.e., structuring, controlling and supervising), a few are also strong on "supportive behavior" (e.g., praising, listening and facilitating).

There is need for decentralizing decisionmaking in many centers. This can help increase the autonomy of the scientists, improve entrepreneurship and create a climate more conducive to innovation.

The challenge to the directors is how to balance their leadership and management roles. Having a cadre of effective managers would help reduce the directors' management burden and allow them to devote more time to developing and fulfilling a future vision for the center.

The tenure of a director should depend on his/her effectiveness as a leader and manager. Decisions on tenure should be left to the boards instead of having a system-wide norm. The System should also encourage movement of successful directors from one center to another.

Strategy formulation. The term "strategy" began to be used widely within CGIAR community only during the last five years. The move toward a CGIAR resource allocation system with a longer time horizon (about five years) emphasized the need for center plans that follow the long-term strategic directions of the centers and provide a sound rationale for the proposed medium-term programs.

Strategic planning has improved significantly in the centers in recent years. The processes used by the centers were mostly participatory (i.e. involved staff). The centers sought the views of their major stakeholders systematically. The boards played a constructive and supportive role. The planning approaches used enabled several centers to initiate organization-wide change processes which went beyond specification of goals and priorities of programs. While the initial costs of strategic planning were high, these should be lower in the future as the centers will have learned from their first experience.

Management of Resources

Management of resources refers to how the centers acquire and manage four types of resources: human, financial, physical and information. These are the primary inputs a center uses to generate desired outputs (and impact). Each center strives to attract and maintain the level and quality of resources required by its strategy.

Management of human resources. Traditionally, management of human resources has not been given high priority in the centers. The EMRs portray a generally mixed performance by the centers in this area. They argue that the function needs to be strengthened substantially in several centers. Also, human resource management needs to be seen more as a dynamic and forward-looking activity than as a passive, bureaucratic operation.

In general, the centers' compensation policies are appropriate for both their international and local staff. Performance planning and assessment is an area of weakness in most centers. There is also need for improving training and career development opportunities for both international and local staff. Other areas requiring improvement vary by center. Principal among these are: recruiting high quality senior scientists (particularly those in their mid-careers), recruitment of women and formalization and objective enforcement of personnel policies.

On tenure of senior staff, each center needs a clear policy which will ensure turnover when this is necessary, but allow it to keep exceptional staff as long as possible. For this, fixed-term contracts should be a norm in all the centers.

Financial management. The general conclusion of the EMRs is that in recent years a great majority of the centers have either improved their performance in financial management or had been performing well all along. Management of fund raising activities has improved significantly in all centers. A few have experimented with novel schemes for stretching their donor contributions. Accounting systems have also improved, due largely to inter-center efforts in the finance area. In

addition, several centers have improved their financial information systems, and some their internal auditing. Many boards have improved their financial policymaking and oversight functions.

Budgeting remains a centralized activity in many centers. A move towards project-based planning and budgeting systems will require wider participation from program and project managers. Financial management at field locations also requires improvement. External and internal auditing is a third area where further improvement is necessary in many centers. In view of the increasing complexity of the financial and economic environments faced by the centers, there is also need to strengthen cash and liquidity management functions. In addition, greater inter-center collaboration in audit systems and practices would be valuable.

Administration. The range of administrative services managed by a center depends on the specific circumstances of its immediate environment and the requirements of its program operations. It varies across the System and there is relatively little comparative data on the management of each type of service. Nevertheless, available evidence shows that there has been improvement in several areas. Administrative services are better organized than before and many centers have instilled a constructive "service philosophy" in the administrative areas. "More" administration is not necessarily seen as "better." There are several examples of improvement in individual centers in such areas as streamlining of administrative operations and installation of computer-based management systems. Recent increases in inter-center collaboration in administration is a promising trend.

Several aspects of administration require continuing attention by the centers. These include timely maintenance of physical facilities, administration at field offices, greater use of cost recovery and charge-back systems and wider exploitation of contracting opportunities.

Information management. Information is perhaps the least understood of the four resources examined. This is primarily because topics typically covered under the information heading are diverse, ranging from records management to publications. Also, information is both an input and an output of the centers, which sometimes creates confusion in the treatment of the subject in the external reviews.

This area has received significant attention by the centers in recent years and notable progress has been made in a number of areas. The role of information services within the context of the centers' programs has been studied carefully in most centers in connection with their strategic planning. There is greater

collaboration among the centers through the recently formed information subcommittee of the center directors. Collectively and individually, the centers are placing greater emphasis on public awareness. Computer services have improved in practically all the centers. Most center senior staff have their own personal computers. CGNET, the CGIAR's electronic messaging system, has improved collaboration among and within centers and led to considerable savings in communication costs.

Despite these notable achievements, there are many areas that require close attention. The information function is highly fragmented in many centers. Several centers need to clarify the role they wish to play in strengthening information management capacities in national programs. Library and documentation operations in many centers require careful study in order to explore streamlining opportunities and the tradeoffs between the two. Improvement of archives and records management should be assigned greater priority. Management (and governance) information systems need further development and improvement in many centers. Also, there is considerable scope for coordination of efforts across the centers in areas such as standards for electronic publishing, bulk pricing arrangements for computer hardware and software, common software for user interfaces to center databases, and so on.

Management of Tasks

This component relates to how a center transforms its strategy into tasks and outputs, utilizing the resources at its disposal. Four specific factors are identified: operational plans, control systems, organizational structure and work processes. The study focusses on the first three of these factors. The appropriateness of the centers' science-related work processes (such as data collection, analysis, testing, field work, training, information dissemination, etc.) are not included as these are not covered by the EMRs.

Operational planning. The centers plan their activities at four levels: medium-term planning, annual planning, project/activity planning and individual-level work planning.

Medium-term planning is a new practice within the CGIAR. Most of these plans, rightly, take the center's long-term strategy as their starting point and describe the programs, activities and projects the center intends to carry out over the medium term. Medium-term planning and the resulting system-wide resource allocation processes have recently been reviewed within the CGIAR.

Annual program planning used to be the principal device for operational planning in the centers until the start of the medium-term process. The centers' annual planning continues to be

based on internal program reviews and the annual budget processes.

Annual internal reviews conducted by the centers take several forms. Some centers review the totality of their programs in sessions attended by all senior staff. The program committee of the board (the whole board in some centers) attends the internal program reviews which serve as a major source of information for the board on program matters. Some centers supplement internal reviews with external peer reviews of programs or departments and some hold periodic conferences for consultation with representatives of national programs.

The annual budget process is the second basis for planning at the centers. Most of the EMRs characterize the budget processes of the centers as "top-down," with little participation from program managers.

Most centers have not yet developed fully operational project planning systems. Planning at the individual staff level is also weak in several centers.

Several of the EMRs have suggested that the centers should critically review their internal planning and review systems. Cost effectiveness of planning should be assessed in the same manner as other center operations, as excessive planning could be a constraint to innovation.

Program review processes. Planning and review represent two sides of the same coin. Plans with clearly specified goals and objectives facilitate evaluation. Results of reviews are a primary information source for future planning. Thus, several EMRs have encouraged closer integration of planning and review systems. Thus, the comments made above on operational planning generally apply also to the centers' program review processes.

A key message of several recent EMRs is that program reviews should be seen as a means of tracking strategy implementation. Equally important, impact assessment should be a regular activity. No center has an organizational unit with a continuing responsibility in this area.

The need for more peer reviews is another common theme running through the EMRs and EPRs. This will become more important as the centers conduct more specialized, upstream research. The centers' systems for assessing individual staff members' performances are oriented more towards accomplishment of concrete work objectives. When implemented more widely, this will facilitate the tracking of strategy implementation to the level of individual staff.

Organizational structure. The experience of the centers shows that there is no one best way to organize international agricultural research. Organizational structure is a means to an end and a response to the unique circumstances of the institution. Each center has found a structural pattern that meets its own unique circumstances, although there are some similarities across groups of centers. In general, multi-commodity centers are organized along commodity program lines and single commodity/discipline centers in terms of disciplines or sub-disciplines. Matrix management is becoming a common integration device in the latter group, though the centers have yet to resolve the complexities involved in operating in a matrix mode. Practically all the centers have moved or are moving towards project-based management systems.

Geographic decentralization is a strong recent trend among the centers. However, there is little evidence of vertical decentralization. In most centers decisionmaking remains highly centralized. While this may be appropriate for some activities that need to be managed for efficiency, tasks with high innovation content require a more decentralized structure.

Major changes in strategy have led to complementary changes in organizational structure in several centers. There is some evidence that the reverse is also true, though to a lesser extent.

Management of Relations with External Stakeholders

The centers' relations with the institutional environment are bi-directional, that is, each center is influenced by and exerts an influence on its environment. The centers' institutional environment is made up of its key external stakeholders. Four such groups are explicitly studied in the paper: the host country, clients/partners, other research institutions and donors and the CGIAR.

The centers manage their relationships with these major stakeholders with a great deal of skill and professionalism. More of each director's time is now devoted to this task. Also, the centers have established special internal mechanisms for day-to-day management of stakeholder relationships. The fact that each center has a powerful team of allies ("friends of _____" groups) around the globe helps in monitoring trends and building or strengthening relationships.

Host country relations. All thirteen centers in the CGIAR⁵ maintain good relationships with the host countries of their headquarters location. Most of the EMRs have complimented the centers for nurturing good relations with the governments of the host countries, including their universities and agricultural research institutions. These relationships are not always without strains, but the centers, by and large, have managed them well.

Relations with clients and partners. Agricultural research institutions in the host country constitute an important client group for the centers located in developing countries, and as noted above, the centers have built and nurtured healthy relations with them. Generally speaking, the centers' relationships with their clients and partners in other developing countries are also good. Most of the EMRs speak of the centers' relationships with national programs in terms such as "excellent," "harmonious," "collaborative," etc. They also compliment the centers for forging mutually beneficial links with regional institutions.

The interface between the centers and their clients and partners in developing countries is complex and dynamic. Each center is searching for new and better ways of understanding and responding to the needs of its principal clients. There has been notable progress in recent years in the centers' communication with their counterparts in developing countries. This will pave the way for more effective and mutually beneficial relationships in the future.

Modes of collaboration between the centers and national agricultural research systems is a continuing system-wide strategic concern. As such, it is likely to remain an active issue in the CGIAR's agenda at least through the current expansion of the System.

Relations with other research institutions. This group includes mainly research and learning institutions in developed countries and the international agricultural research institutions (IARCs) within and outside the CGIAR. The centers have a good track record in managing their relationships with both groups.

Relations with donors and the CGIAR. A significant portion of each director's time now goes to handling relations with donors and the CGIAR. Growth in the number of donors contributing

5 As of May 1991, the CGIAR has accepted three other centers into the System and a fourth is in the process of being established.

to each center's programs, expansion of special project and restricted core funding and increases in TAC and CGIAR Secretariat requests from the centers require greater care and attention from the directors in the management of these relationships.

Most centers have assigned one or more of their staff to day-to-day coordination of these relationships. As a result, the centers are better able to (and spend more effort in) monitoring donor trends and exploring new funding opportunities.

The centers' approach to their relations with TAC and the CGIAR Secretariat is as much guarded as it is open and frank.

Management Skills and Teamwork

In 1988, about 13,000 people worked in the thirteen CGIAR centers, including about 700 internationally recruited senior staff. Practically all of the latter play managerial roles, yet only a small percentage of them have had previous training or experience in management. Recognizing this, the centers, with assistance from the Secretariat, have collaborated in initiating an inter-center management development program. Also, individual centers are beginning to develop modest in-house management training courses for their international and local staff. These are healthy developments, but they are only a beginning. To make a difference in center performance, they need constant and dedicated support from top management.

There is little empirical evidence on the quality of teamwork in the centers. The centers' long experience in carrying out their work through interdisciplinary teams, their recent advances in participatory strategic planning and internal reviews and exposure of the senior staff, who participated in management training courses, to techniques of effective communication are promising developments for further improving teamwork.

Crosscutting Organization Attributes: Adaptability, Accountability, Efficiency and Innovation

These four organizational attributes derive from good management of the components and factors already discussed. Collectively, these attributes influence a center's potential to perform in the future.

Adaptability. This is generally regarded as one of the most desirable characteristics of any organization. A center's potential to perform well in the future depends to a large extent on its ability to adapt to changing circumstances. Rigid and

inflexible organizations face survival difficulties, particularly during turbulent times.

The centers by and large have good systems for scanning the changes in their environment. They do not automatically respond to these changes, in part because of the need for maintaining the stability of their programs. There are also internal factors which curb their response capacity. As in other facets of center life, the director has a pivotal role to play in assessing the forces for and against change. He/she can filter some external pressures in order to maintain internal stability. The director also has the authority to reduce internal rigidities when this is necessary.

Accountability. Accountability goes hand-in-hand with autonomy. The donors expect the centers to be accountable for their performance in return for the management autonomy granted them. Also, donors expect the centers to have strong internal systems of accountability to ensure that the benefits and outcomes of the activities they fund can be assessed at any time.

Despite a few areas of weakness where improvements are being made, emphasis on accountability continues as a CGIAR tradition. Improvements in the centers' systems of self-accountability (at both the board and the institution level) are a welcome development. Although this does not obviate the need for externally imposed measures of accountability, the improvements in internal systems will in the future facilitate the externally commissioned processes and lead to greater system-wide improvements.

Efficiency. This is another goal valued by the donors and the System. They are interested in the centers getting the most value for donor contributions. Wastage of resources, top-heavy bureaucracies and slow decisionmaking limit a center's program effectiveness. Continued funding of a center depends, in part, on the efficiency of its operations.

There is little documented evidence in the EMRs on how efficient the centers are. The evidence presented in the paper suggests that there is room for increasing the efficiency of the centers' routine administrative and program operations and that the centers can and should take steps to bring about improvements.

Looking at efficiency in a broader context can be helpful. Discussion of efficiency should start with an examination of the output, not the input side of the efficiency equation. The centers should be doing the right things, and these should be done efficiently. In this regard, the recent emphasis in the System on strategic planning is a healthy sign.

My personal judgment is that the centers are managed more efficiently and with much less bureaucracy (in its negative sense) than public bureaucracies in most donor countries and international agencies which serve as the cosponsors of the CGIAR.

Innovation. Innovation and creativity are important for any organization, but they are more so for the CGIAR centers because their main business is generation of knowledge and technology. Management systems and practices of the centers need to foster an institutional climate within which scientists can innovate.

The centers possess many of the institutional characteristics required for nurturing innovation and creativity: good facilities, supportive leadership, capable staff and a long tradition of experimentation. The work of the centers has become more complex over time with the introduction of new goals and activities. To improve their innovative capacity, the centers need to better insulate innovative activities from the others, create free time for the scientists, encourage risk taking, and minimize administrative controls on project teams working towards innovation. Also, recruitment practices need to be examined to allow the entry of scientists in mid-careers, and new roles or jobs need to be found for long-tenured staff who no longer have the same innovative potential as they had earlier in their careers.

Conclusions

That the centers have made impressive progress in improving their management during recent years is clear from this report. Yet, there is more to be done as argued by the individual EMRs and the observations made in this paper.

Specific conclusions. The most significant improvements in managing the centers have been in the following areas: governance, strategy formulation, managing relations with clients/partners and other research institutes, information management and management skills. Progress in most of the remaining areas has been moderate.

The areas requiring the most improvement are the following: governance, human resource management, management of administrative services, information management, program reviews, organizational structure, relations with clients/partners, management skills and innovation.

A great majority of the areas where there is need for major or moderate improvement in the management of the centers are also areas in which the centers have made significant or moderate progress in recent years. This means that the centers, by and large, are on the right track for management improvement.

However, they need to continue this momentum into the future in order to further strengthen their management effectiveness.

Broad conclusions. Looking at management of the centers in a broader sense, five main conclusions are reached:

- Center guidance, which covers the "macro" aspects of management, is becoming a management strength of the centers, which is a very healthy sign.
- Stakeholder relationships is another notable strength; one the centers can capitalize on in the future.
- Improving the quality of staff remains a continuing challenge and should be given priority.
- Recent progress made in managing resources and tasks should be sustained and accelerated.
- New thinking and emphasis on the centers' impact and efficiency is needed.

1. INTRODUCTION

The CGIAR is a unique and successful institutional innovation in international research and development.¹ Its impact on world agriculture and contributions to the "Green Revolution" of the 1960s and 1970s are well documented (Anderson et al, 1988). The CGIAR's institutional structure can serve as a model to other international initiatives in development. Many international research institutions outside of the CGIAR have been established and are being managed in the mold of CGIAR-type autonomous centers.

The CGIAR derives its success, first and foremost, from the success of the individual centers that make up the system.² Though the centers' staffs often work in remote locations around the globe, by and large their scientific work satisfies demanding international standards and acts as a focal point for development of improved technology.

The centers' effectiveness in terms of the outputs and impacts of their programs depends on how well they are managed. The initial centers had a clear focus (e.g., "increasing the pile of rice"), competent and motivated staff, visionary leaders, good teamwork and adequate facilities and financing--requisites for a successful operation. Over time, mandates and foci have changed, the centers have grown bigger and the operations more diverse. The centers have adjusted to the new circumstances and have explored new ways of managing their work.

1.1 Purposes and Caveats of the Study

This study provides an overview of the current state of management in the CGIAR centers. It is a personal paper based on an across the system analysis of center strengths, weaknesses, challenges and opportunities in the area of center management. Its primary purpose is to provide a stocktaking of recent practices. The paper is geared toward multiple audiences. For the CGIAR, it provides an overview of the state of management in the centers, based largely on an analysis of the External Management Reviews (EMRs). For individual centers, it provides examples and analysis of management practices within the System and suggestions for improvement which may be applicable to their situation. For future external review panels, it serves as a reference document on recent management practices across the centers.

1 See Annex 1 for an overview of the Consultative Group on International Agricultural Research (CGIAR).

2 See Annex 2 for an overview of the CGIAR centers.

The paper does not address questions of System management; its focus is exclusively on center management. Several center-level concerns, like center governance, have system-wide implications. These need to be studied separately, in the context of the overall organizational and management structure of the System. The work being carried out by TAC in updating the System's strategy and priorities and in studying the organizational options for the expansion of the CGIAR also relates closely to how the System could be managed in the future.

As noted above, the primary sources of information for the paper are the External Management Review (EMR) reports for each center. The EMRs were initiated by the CGIAR in 1983, in response to the recommendations of the Second Review of the CGIAR (1981), to complement an ongoing system of periodic reviews of centers' programs by independent panels of international experts. The responsibility for commissioning the EMRs was assigned to the CGIAR Secretariat. Starting with the pilot management review of CIP in 1983, each of the thirteen CGIAR centers has been reviewed at least once. In all, eighteen EMRs have been conducted to date.³

Initiation of the EMRs reflects the CGIAR's concern for the accountability of the centers for their results as well as their efficiency in the use of donor funds.⁴ The emphasis on accountability is a counterbalance to the autonomy granted to the centers in managing their internal affairs. Thus, as a price for their institutional autonomy, the centers are required to demonstrate to the donors their program and management effectiveness.

Although the EMRs serve as the primary data source for this study, not all the generalizations are based solely on the EMR reports. Most of the initial EMRs are now outdated and the respective centers have taken action in response to the recommendations made by the panels. In these cases, the generalizations are based more on recent impressions on the current state of management in the centers than what is said in the old EMR reports. There still remains a time-frame problem, however. Although an attempt to update the data base of the EMRs was made, this was not possible in all cases. Hence, there are some instances where quotations or examples from old EMRs are used which may not accurately reflect the current situation. This applies mainly to direct quotations from the first EMRs of ICRISAT, IFPRI and ILRAD.

3 See Annex 3 for a list of EMRs conducted as of April 1990, and the names of individuals who served on the review panels.

4 See Annex 5 for background information on the general content and process of EMRs.

Also, current management practices in two of the thirteen centers (WARDA and IBPGR) are not covered adequately in the paper. What is written in the 1983 WARDA EMR and the 1986 Interim Program and Management Review on management matters is hardly applicable to the WARDA of 1990 which is, for all practical purposes, a new institution. Similarly, many of the management issues covered in the 1985 External Program and Management Review of IBPGR are not relevant to the current state of affairs in this center.

There are also several management areas not treated adequately or well by each EMR panel. In these cases, the judgments that appear in the paper reflect personal impressions (and biases). In many ways, then, the paper is a personal statement on center management, based on interpretation of the EMRs and other knowledge gained through contacts with the centers. A personal paper was written, instead of a formal Secretariat report to avoid watering down of views and ideas, which is inevitable in a consensus document on a subject like management. It is hoped that the approach taken will stimulate greater interest and discussion within the CGIAR community.

The fact that I have had direct personal involvement in coordinating most of the EMRs and have served as a consultant to the centers in the management area has both advantages and disadvantages in the preparation of an overview paper such as this. The knowledge gained from the personal involvement and experience has certainly been valuable in interpreting the written word in individual EMRs with the familiarity of an insider, and in comparing them across the centers keeping in mind the reports' strengths and weaknesses. The disadvantage is that a person involved in the process may not be able to carry out as objective an assessment as one not involved with the process. For this reason, I would like to emphasize that this is a personal, subjective paper written with the intention of and care toward maintaining objectivity.

The process of conducting management reviews is an area deliberately not covered fully in the paper, though Annex 4 gives a brief overview. Coverage of this topic would have detracted attention from the main focus of the study: the management effectiveness of the centers. The study clearly points to areas of management where the information in the EMRs is insufficient for making system-wide generalizations. These are being examined by the Secretariat as a follow-up to the paper for further improving the CGIAR's external review processes.

An earlier draft of the paper was circulated for comment to the center directors, board chairpersons, TAC members and the chairpersons of External Management Review panels in early March 1990. The paper was discussed by TAC in its March meeting in Rome. Comments have also been received from most of the

individuals who chaired the EMR panels and some center directors and board chairpersons.

The paper was presented to the CGIAR at its Mid-Term Meeting in May 1990 at the Hague. The Group broadly endorsed the conclusions and recommendations of the paper and encouraged the Secretariat to continue efforts in facilitating improvements in management at the centers along the lines outlined in this paper.

With this paper the CGIAR is starting a tradition of taking stock of management in the centers on a periodic basis. With the expansion of its activities and the possible changes in its structure as well as that of the centers, the CGIAR plans to give increased attention to management matters. Overviews of management in the centers will also enable the centers to learn from the experiences of others and assess their management in the context of system-wide patterns.

1.2 Conceptual Framework⁵

The focus of this paper is on the management effectiveness of the CGIAR centers. Management effectiveness refers to the extent to which a center's management systems, policies and practices facilitate or constrain attainment of desired results. The centers' overall effectiveness, as measured by their outputs and impacts, is not discussed. Instead, the focus is on the inputs and processes used in generating outputs.

Ideally, one should examine both the centers' effectiveness (in terms of their achievements and impacts) and their management to establish links between management variables and indicators of impact and explore the degree to which management factors influence the generation of output. Lacking indicators of output and impact that are reliable and also comparable across the centers, the analysis is limited to a study of only the management factors.

Two critical questions arise when the focus is only on management factors: what factors should be examined; and what standards should be used in deciding how well the centers are doing on each selected factor?

The choice of factors is tantamount to drawing a framework or template for analyzing center management. To be credible and useful such a template should reflect both the realities of

5 See Annex 4 for a detailed discussion of the conceptual framework, its antecedents and internal logic. What is presented in the text is a brief summary of the framework.

management in the centers and the current thinking on determinants of organizational performance in the field of management. The conceptual framework developed (see Figure 1) attempts to accomplish these two objectives.

The standard for assessing how well the centers are performing on each selected factor is largely a matter of professional judgment. The EMR panels have made such judgments based on their professional expertise in different fields of management. Like the panels, in this study I used personal judgment to assess the strengths and weaknesses of the centers on each management factor. The credibility of these judgments depends, of course, on the reliability and validity of the data and the general acceptability or validity of the standards used to differentiate poor performance from good performance on a given factor.

It is sometimes claimed that the external reviews in general and the EMRs in particular have a built-in bias toward accentuating the negative rather than the positive aspects of the centers' work. There is some truth to this, as the review reports highlight the areas where improvements are recommended. Absence of recommendations in a given area is usually a sign that the center is performing well in that area. In making judgments on each management factor the possibility of such a built-in bias in the review reports was considered and an attempt to provide a balanced assessment was made.

Description of the conceptual framework. The framework used for this study captures the salient aspects of other models available in the management literature (see Annex 5 for a description of these) and recognizes more explicitly the special circumstances and peculiar characteristics of the CGIAR centers. These include the following:

- The CGIAR centers are international institutions operating in many developing countries and are staffed by persons with different cultural backgrounds. This introduces complexities in managing people and coordinating activities not found in organizations in single, mono-culture environments. Guiding values and principles and leadership play important roles in integrating diversity and channeling efforts toward desired goals.
- The centers are autonomous in their management, and are subjected to oversight by the CGIAR. The demands for transparency of operations, rigorous justification of activities and spending plans, and for accountability are considerable and increasing. To operate successfully in this environment, the centers need strong capabilities in strategic and operational

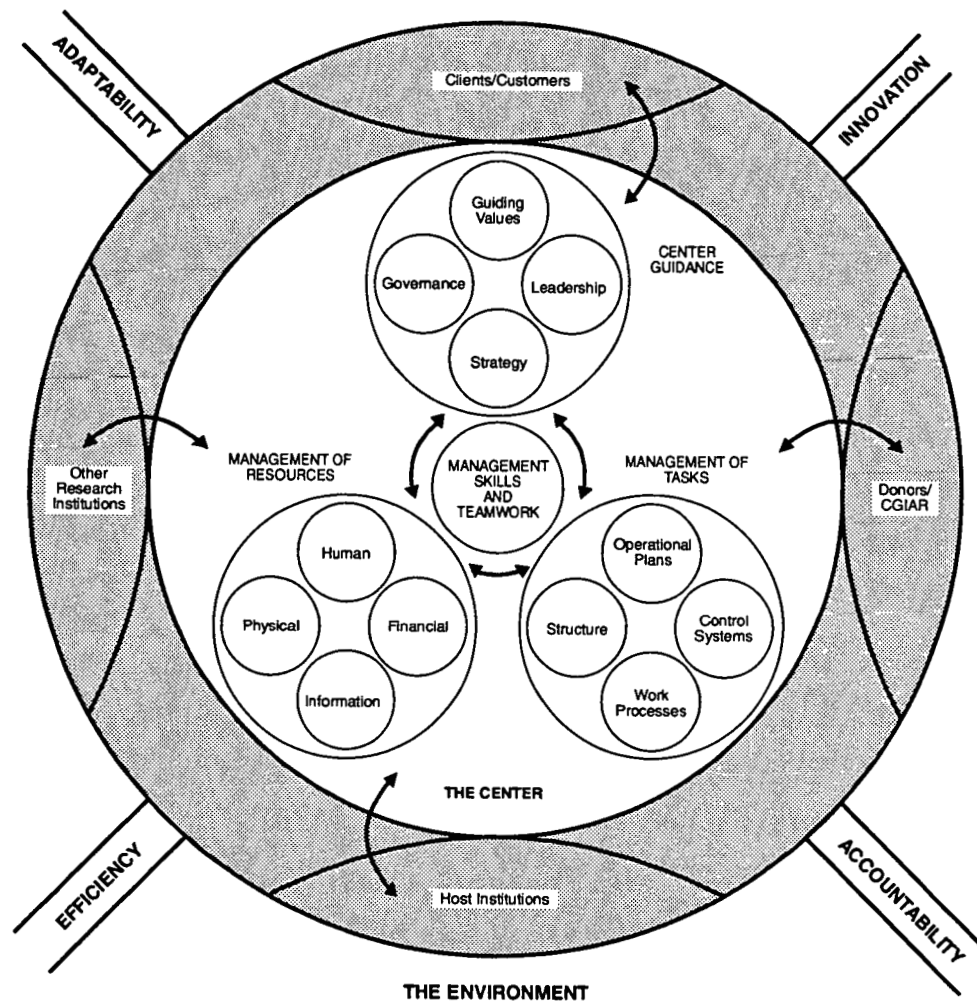


Figure 1. A conceptual framework for examining management effectiveness in the CGIAR centers

planning and budgeting and good skills in managing their relationships within the CGIAR.

- The centers have a unique governance system, unlike that found in other non-profit organizations. The boards have policymaking and oversight responsibilities similar to those found in other organizations, but their modes of operation are different. Board effectiveness is an important requirement for successful center management, not least because the System places priority on self-accountability of autonomous institutions (that is, in addition to system-imposed mechanisms for ensuring accountability.)
- In strictest terms, the centers have only a one year "lease on life" because their funding is determined on a year-to-year basis. Also, their funding comes from a number of bilateral sources, necessitating constant (and vigilant) attention to donor and public relations.
- The main business of the centers is research. To be successful, they need an institutional environment conducive to innovation and creativity. Coordination and communication structures and management practices need to reinforce the conduct of innovative research. Scientists placed in management positions need to have appropriate skills for motivating and coordinating the work of others. As most research conducted is interdisciplinary, scientists need to work effectively in teams.
- Last, but not least, most of the centers operate in very difficult socio-political environments. Also, high quality physical and administrative infrastructures, that are often taken for granted in developed countries, do not exist in most of the countries in which the centers work. These conditions place demands on a center to operate a self-sufficient physical plant and administrative machinery and to nurture and maintain close relations with the institutions in its host country.

The framework shown in Figure 1 has five interrelated components, each focussing on an aspect of management in the centers: center guidance, management of resources, management of tasks, institutional environment and management skills and teamwork. In addition, it includes four crosscutting organizational attributes (adaptability, accountability, efficiency and innovation) as a derivative of the five components. These are defined and described in Annex 4. The following is a summary of the descriptions in the annex.

- Center guidance includes management factors that describe how a center gives purpose and direction to its activities and determines the broad policies that shape the actions of its management and staff. Four major factors are explicitly recognized: guiding values, governance, leadership and strategy.
- Management of resources refers to how the centers acquire and manage four types of resources: human, financial, physical and information. These are the primary inputs a center uses to generate desired outputs (and impact).
- Management of tasks relates to how a center transforms its strategy into tasks and outputs, utilizing the resources at its disposal. Four specific factors are identified: operational plans, control systems, organizational structure and work processes.
- Institutional environment refers to how a center interacts with its major stakeholders. The focus of this component is how well the centers manage their relationships with four groups of stakeholders: clients/partners, the donor community and the CGIAR, other research institutions and institutions and individuals in the host country.
- Management skills and teamwork refer to how skillful a center's managers and supervisors are in managing other people in producing desired results, and whether staff are able to work in a mutually supportive fashion.
- Adaptability, accountability, efficiency and innovation refer to organization-wide attributes that derive from good management of the components and factors listed above. The attributes selected reflect personal judgments on the most desirable institutional features of the CGIAR centers.

The reader should refer to Annex 4 for a further discussion of the conceptual framework.

Limits of the conceptual framework. Like other conceptual models described in Annex 4, the framework shown in Figure 1 serves essentially as a template for and a guide to discussion of different aspects of management. The EMR panels have found it useful as a diagnostic tool for assessing management effectiveness. However, it is not intended to serve as a blueprint for managing each and every center.

An important characteristic of the centers is their diversity. Each center operates in a unique institutional milieu,

faces different constraints, and has a different mandate, organizational culture, staff mix, funding pattern, organizational structure, etc. No single conceptual framework could capture the complexity and diversity of management in the centers. A factor which may be of crucial importance for management effectiveness in one center (such as the political constraints faced by ICARDA, the need to smoothly operate the large physical plant at IITA, or the strength of the informal organization at IRRI) may not be so in another.

Even if the conceptual framework were to help identify a center's areas of strength or weakness, their relative importance for improving overall effectiveness would vary from center to center. For this reason, when studying a single institution, the areas of strength or weakness identified by using the framework need to be interpreted in the context of the special circumstances of that institution, before judgments can be made on the actions that are required to improve organizational performance. This is basically what was done by individual EMR panels.

One implication of this for the current study is that an area identified as a strength or a weakness of the centers in general may be more critical for success in one institution than another. For this reason, the generalizations made in the paper refer to an imaginary institution that is a composite of all the centers, not to any existing institution. The centers each need to interpret the findings and judgments made here in light of their own unique circumstances.

2. HOW ARE THE CENTERS GUIDED?

2.1 Guiding Values

Values are principles, standards or qualities regarded as worthwhile or desirable (Webster's II). As with people, organizational values shape priorities, influence attitudes and behaviors and serve as a guide to action. The more deeply held, the less likely they are subject to change. But change does take place as an organization constantly tests and retests the instrumentality of its values, and changes in leadership bring out new visions about the institution's future.

In studying the centers, principal interest has been in core values that are widely shared and in reality guide the actions of its staff (thus, the term guiding values). These usually include values that define what the center stands for and its beliefs on how it can accomplish its mission, both in terms of hardware (technical matters) and software (human resources and relationships).

Guiding values sit at the core of a center's strategy. They are covered separately here because, in the absence of a clearly articulated strategy, guiding values become the main source of institutional direction. Also, it is possible that a center could have a formal strategy which runs counter to some of its guiding values.

In general, the EMRs have not given much attention to guiding values. Starting with the 1987 IRRI EMR, a few have attempted to address questions of organizational culture. Most of these attempts go little beyond exploration of alternative approaches to studying this complex subject.

System-wide trends. In the CGIAR's early years, the centers had clear guiding values. "Increasing the pile of rice" (or wheat or maize) was not only a goal, it was a deeply held value about why IRRI (or CIMMYT) existed. This was complemented with a similarly held value on how to conduct research: get the best scientists money can buy, provide them with the facilities and staff they need to do research and leave them alone to do their work.

The centers' (and the System's) conception of their role has changed over the years. The initial focus on increasing production was broadened to include research-related activities such as training and information services. More recently, it was further expanded by including the strengthening of national research systems as a goal of the centers, along with research. Collaboration with national and regional institutions to strengthen their research capacity is now a value strongly held by the management and the staff of all the centers.

An outgrowth of these modifications in mission is that the centers are more client-oriented. National and regional research institutions are regarded as the primary clients¹ of the centers, and the small farmers their ultimate beneficiaries. Center strategic plans define clients clearly and emphasize the client-driven nature of the centers' work. Most of the centers involve their key clients in their strategic planning efforts and internal program reviews. Some carry out rigorous assessment of client needs on an ongoing basis.

The centers' client orientation is reinforced with geographic decentralization of their research activities. CIP, IBPGR, CIMMYT, ILCA and ICRISAT are the most decentralized among the centers. Closeness to clients through decentralization is a widely publicized value of CIP. Adopting a "listening attitude" in relation to their clients is being reinforced by CIMMYT and other centers.

The centers are by and large unbureaucratic institutions. The weaknesses in center management identified by the EMR panels, many of which call for instituting standard procedures in administrative areas, show that the centers have been hesitant in the past to build management systems and processes that may lead to or give the appearance of bureaucratization (see also Section 7.3 on this subject).

Another related common guiding value is precedence of science over administration. The managements of the centers constantly emphasize that administration exists in order to facilitate the centers' scientific work.

A recent innovative development is the emphasis placed on values and culture in the centers' assessments of their strengths and weaknesses. CIMMYT and CIAT conducted studies of their organizational culture as a part of their strategic planning efforts. CIP and IFPRI organized "self studies" which included searching examination of values shared by their staff. IRRI formulated a set of principles the center as an institution stands for.

Increasing concern over and commitment to management development is also a new emphasis. The centers believe in the value of and have placed priority on upgrading communication and management skills of their key managers.

¹

In the remainder of the paper the term "clients" is used to refer to institutions and individuals (mostly in developing countries) toward which the center outputs are directed. Many of these work with the centers in a collaborative partnership mode.

The same can be said for inter-center collaboration. The directors are working more effectively as a team. Several inter-center working groups (in such areas as training, information, finance and administration) have been set up to address joint concerns collectively and to better coordinate their activities.

Examples from the centers. Guiding values differ among the centers as they each have different missions and face different operational circumstances.

CIP is an example of a value-driven center. The core CIP values include maintaining a decentralized operation, using contract research whenever possible in place of in-house research, establishing and facilitating the running of country research networks and maintaining a low profile, with modest facilities and low-cost overhead. CIP also emphasizes a matrix organization structure -- with disciplinary departments and program thrusts as the two dimensions of the matrix -- involving social scientists in research teams, and organizing international planning conferences (CIP 2, p. 31). Perhaps more than any other aspect, these principles have dominated management at CIP over the years and are quite salient in the day-to-day operations of the center.

CIMMYT best represents a center undergoing value change. The strong emphasis placed on individual and unit autonomy is being maintained, but with greater concern for accountability. Similarly, the "breeding ethos" that dominated CIMMYT's operations for years is being modified to make room for new ways of conducting applied research (CIMMYT 1, pp. 2-4).

Different values can be observed in other centers. Maintaining scientific excellence is valued by many. ICARDA and IITA have a deeply held belief in the value of conducting research with a farming systems perspective. ISNAR's work is guided, in part, by twelve critical factors for success in national research programs. CIAT strongly believes in conducting inter-disciplinary research within commodity programs.

Other examples can be given, but the pattern is the same. Each center has a reasonably clear notion of what type of research will satisfy its mission best and how that research should be carried out. Increasing use of participatory planning and the persuasive powers of the directors have led to wider sharing of these values by the staff.

Whose values? The values strongly held by each center are influenced by a number of factors. External influences are important, particularly when they involve broad changes in center goals and priorities. Thus, the CGIAR and TAC, in their work to guide the System, exert pressure on the centers which often calls for modification of center values. Whether these pressures lead to change in center values, and with what time lag, depends upon

the internal resistance to each specific change. A center already committed to working on resource management concerns, for example, would have little difficulty in going along with a strong external pressure to place priority on sustainability. However, a center deeply committed to the value of germplasm development may appear to embrace the focus on sustainability, but it may take a long time before a sustainability perspective becomes a strongly held norm.

The external cultural milieu within which a center operates also has a bearing on its guiding values, particularly as these relate to values regarding human resources and relationships. Thus, the emphasis ICRISAT places on administrative rules and procedures, to give an example, has its rationale in what would work and not work in the Indian context. The same emphasis may not necessarily be required in centers that operate in different cultural settings.

On balance, however, internal forces are more important than external forces in shaping a center's guiding values. The strongest internal influence on a center's guiding values is from a strong leader. CIP, IFPRI, ICRISAT and ILRAD provide good examples of this phenomenon. It is also no surprise that these centers have been led by long-tenured directors.

Guiding values for a center need not come from the director alone. Over the CGIAR's history, many prominent center scientists have left their imprints on their centers, particularly on ways of doing research. For example, Norman Borlaug's approach to applied science in general and breeding wheat in particular still influences CIMMYT's wheat program.

Most center boards play more of a reactive and responsive than proactive role in setting guiding values. Under the current governance system, they generally neither have the time nor the opportunity to play a stronger role. However, they carry a major responsibility in making decisions about the tenure of a director general and in choosing a replacement--decisions which influence the center's future guiding values.

Do the centers have the "right" guiding values? It is not easy to answer this question because what is "right" depends on each center's individual circumstances and on whether its current "value map" leads to the realization of desirable organizational goals. Each center was not analyzed separately and most of the EMRs touch on the question of guiding values only tangentially.

What can be observed, however, is that the centers have a greater awareness of questions on organizational values, as illustrated by the few cases cited above and the value statements made in their strategic plans. What appears to be lacking in public statements on guiding values are philosophies regarding human resources, risk taking and efficiency.

Although they generally have good staff, management of human resources is not a strength of most centers as discussed in Section 3. The centers' view of and commitment to senior staff varies across the IARCs and is often not clear. Also, center policies regarding locally recruited staff need improvement in several centers.

Risk taking and innovation go hand in hand. If failures are not accepted, innovation may be hard to come by. Have the centers turned more conservative since the early days of IRRI and CIMMYT? Or has the nature of the work changed so much that the centers are no longer in the innovation business? Whatever the answers to these questions, it may be useful for the centers to clarify their attitudes toward risk taking and innovation (see also Section 7.4).

With regard to efficiency, the query is more on the centers' attitudes toward resource utilization than on output per unit of input. Have the resource-rich periods of the CGIAR encouraged a view and a pattern of resource utilization by center staff which cannot be maintained in times of resource scarcity? There may be merit in the centers' clarification of their values on resource utilization.

Conclusions on guiding values. The increasing emphasis the centers are placing on guiding values and principles is an encouraging sign. The program philosophy of most centers is relatively clear. Recent efforts in strategic planning and internal management reviews have helped in the clarification of values and have reinforced the centers' client orientation. Internal forces, in particular the values of the director, have been more important than external forces in shaping a center's guiding values. There is need in many centers to clarify some of their institutional values, particularly in areas such as risk taking and innovation, efficiency and management of human resources.

2.2 Governance

Governance is one of the least appreciated aspects of center management in the CGIAR. The donors have high expectations from the boards, as reflected by Shahid Husain, CGIAR's Chairman during 1984-87, while summing up the discussion of the external reviews of a center during a recent CGIAR meeting:

"In another context, I have said that the Boards are where the buck stops in our system, which means that the boards, as far as the individual centers are concerned, are the final authority."

"But the system is in a real dilemma when a Board fails. What do we do, except to wring our hands and withhold our

money, and that's not good enough, because we are wedded to the substance of these institutions."

"Therefore, I would like to say to the Chairman of the Board and the members of the Board that since you are the ultimate authority, the responsibility on you is considerable."

"The responsibility on you is considerable because much of the Board is not nominated by anybody else, but by the Board members themselves. So, for all practical purposes, you have self-perpetuating Boards. And if these self-perpetuating Boards don't rise up to the challenge of the management of our centers, then clearly, either the concepts will have to change, or our centers will be weakened substantially" (CGIAR International Centers Week, Transcript of Proceedings, Volume II, pp. 29-30; also quoted in Dillon 1987).

While it cannot be said that all of the individual boards in the System have fully met the challenge outlined by Husain, overall, there has been a significant improvement in board operations and performance in recent years. There is also a better understanding within the System of factors contributing to successful board performance. Although the task is yet unfinished in many centers, the progress made to date holds promise for ensuring a healthy and stable governance mechanism for the System in the future.

In this section the above theme is elaborated upon by commenting on the following aspects of governance in the centers:

- Characteristics of CGIAR boards;
- Overall board performance;
- Performance of major board functions;
- Factors influencing board performance;
- Areas requiring improvement;
- Accountability of the boards; and
- The question of structural reform.

Characteristics of CGIAR boards. The initial boards in the System were patterned after the governance mechanism used by the Rockefeller and Ford Foundations which created them. The foundations appointed the initial members and several of their staff served on the boards as members, therefore board accountability was not an issue. But, center autonomy was an

issue, because the foundations were heavily involved in the management of the centers.

The broad pattern that emerged after the formation of the CGIAR maintained many of the features of the foundation-led boards. Foundation members were replaced with CGIAR nominees, with selection done by the board itself. Members were chosen on a personal basis, not as representatives of their institutions. This helped insulate the centers from political pressures. Boards became largely "self accountable." However, the CGIAR expected a board to "behave as if it were accountable to the Group, even though its legal status makes no provision for such a relationship," because the Group provides their funds (CGIAR, 1981, p. 93).

CGIAR center boards are similar in nature to the boards of private universities in the U.S. When compared to corporate and non-profit boards in North America and the U.K. (which both figure prominently in the literature on boards), the CGIAR boards exhibit some characteristics of each.

Typical corporate boards are small (10-15 members), with good attendance rates (90 percent or higher). Their role is to direct the affairs of the corporation. There is no second tier board, such as the supervision boards found in many European countries and in Australia. The membership is insider-dominated, although there is a trend toward expanding the number and role of the outsider members (Chandler, 1975; Lewis, 1974). Corporate boards are accountable to the stockholders. They meet frequently (4-12 times a year). There is often no fixed tenure and members are paid competitive rates.

By comparison, boards of non-profit organizations (such as United Way in the U.S.) are large (20-30 members), with poor attendance rates (50 percent or less). The boards do not "direct" in the sense of the corporate boards. Their role is to raise funds, administer some activities and provide broad supervision. They are composed almost entirely of outsider members (except the CEO) and meet less frequently (2-4 times a year) than the corporate boards. Their accountability is defined by law. Members are selected for fixed terms (2-5 years) and serve as volunteers (Duca, 1986).

Like the corporate boards, the CGIAR boards are small and have high attendance rates. They neither "direct" center affairs in the sense of the corporate boards, nor are they involved in administration as in the non-profits. Their main roles are to appoint/dismiss the CEO, make center policy and provide oversight. Two-tiered structures are not favored. (The one exception is WARDA.) The membership is composed of outsiders, with the center director serving ex-officio as the only insider member. The boards generally hold one long meeting per year

(long compared to corporate and non-profit boards), supplemented with a second occasion when board committees meet. Their accountability is as defined by the laws of the country where they are incorporated. Members are selected for three-year terms, renewable once. They are paid a modest honorarium for their services. This CGIAR board model is also used in most of the non-associated centers.

Two CGIAR centers had governance structures somewhat different from the common CGIAR pattern. In both cases the EMRs recommended, and the CGIAR endorsed, changes in the direction of bringing these centers' governance models closer to that found across the System. In the case of IBPGR, where the board carried substantial operational responsibility, operational tasks were transferred to management. In the case of WARDA, the inter-governmental regional association which did not insulate research from political interference was reconstituted in the mold of the other CGIAR centers. WARDA still has a political element (in the form of a Council of Ministers), which is necessary so long as the organization maintains its inter-governmental status. Routine governance is handled by an apolitical board of trustees.

Overall board performance. The literature on boards focusses more on board weaknesses than strengths. A study of boards of directors of for-profit and non-profit institutions in nine countries found that the boards were ineffective in the following respects: they lack objectivity and independence; they lack true authority over management; they lack a grasp of what is going on in the company; and, they do not work hard enough (Directors and Boards, 1979). In another study, common criticisms of corporate boards were grouped into three main points: "the board is a rubber stamp," "the board is dominated by the CEO," and "the board is plagued with conflict of interest" (Weidenbaum, 1986).

The CGIAR center boards are not immune from similar criticisms. In the meetings of the CGIAR a few members have persistently criticized the lack of formal accountability for performance of the center boards and the limited size of the candidate pool from which board members are selected. Inaction by the boards is often criticized when problems are discovered in connection with the work of a center. Lack of true authority over management is another criticism levied against some boards. Donor and host country interference in their affairs has also been recognized by some boards as a factor impeding their performance and limiting their autonomy.

The EMRs have substantiated some of these criticisms and added fuel to the argument. Of the thirteen recent management reviews of the centers, in seven the overall performance of the board was judged to be "poor" or "uneven," in five there was no clear conclusion on performance and in one case the board was judged to be performing well. As these judgments were made at

different times over the last six years (and by different panels), there remains a question of reliability of inter-center comparisons on overall board performance. Several of the boards judged to be performing "poor" or "uneven" at the time of their management reviews have since exhibited significant improvements in their performance (e.g., IRRI and ILCA) or are in the process of making improvements (e.g., CIP and ICARDA). Thus, although the overall weight of the judgments of the EMR panels is in the direction of moderate board performance, more recent observations show a strong trend toward improvements.

Performance of major board functions. The CGIAR center boards have three main functions:

- To appoint or dismiss the director;
- To make policy for the center; and
- To oversee implementation of the center's strategies and policies by the management.

The boards also play other roles. Legally, they are accountable for the actions of the center. Their chairpersons and members represent the center in their home countries and in the international fora. Members from donor countries often help raise funds for the center. Board members also act as communication channels to governments and as buffers between centers and donors. These secondary roles are not insignificant, and by and large, the boards have a good track record in performing them. We briefly comment below on the boards' performance in the three main areas highlighted above.

- Generally speaking, the boards have been performing well in carrying out their responsibility to appoint/dismiss the director. At least two changes in directorship of the centers in recent years were induced by their respective boards. Search processes for a new director have been substantially improved and are handled quite professionally. Several boards assess the performance of the director formally and on a regular basis, which was unthinkable in the early years of the CGIAR. Information on director remuneration is shared among the board chairpersons. Despite the frequent changes in its composition, the Committee of Board Chairpersons (CBC) has proved to be a useful forum for informal discussion of board matters among the chairpersons.
- In the area of policymaking most CGIAR boards play a reactive role. Strategic and other policy issues are usually brought before the board by the management, with a specific proposal for endorsement by the board.

The visions on the future of the center are usually those of the director and his staff, not the boards'. The knowledge base of most board members on center affairs is limited, as is the time they devote to center business. The boards make policy decisions, but play a modest role in setting the policy agenda and formulating options.

- Board performance has improved markedly in recent years in the area of center oversight. Oversight of program matters still dominates the work of the board. Board program committees spend considerable time participating in internal program reviews and most of the board discussions focus on operational program issues. Time spent by the boards on operational program matters is a necessity as this enables members to understand the operational context in which center strategies are implemented. Recently the boards have been playing a major role in the discussion of center strategic plans.

Oversight over financial and administrative matters was not a traditional strength of the CGIAR boards. However, more emphasis has been placed recently on improving the board's oversight function in these areas. New board committees have been established to look after financial, administrative and management matters. Audit committees are now more effective. More time is being spent on personnel and administrative matters. Also, all boards are making an attempt to strengthen their membership in the areas of finance and management. The EMRs have filled some of the void in board oversight on management matters.

Factors influencing board performance. Success of the CGIAR boards depends ultimately on their composition and how well they manage their board business. Both factors are equally important. Having good members is necessary, but not sufficient for good performance. Managing the board business well is essential for board effectiveness, but without good members it alone cannot lead to good performance.

Conceptually, the factors influencing board performance are not different from those contributing to the center's management effectiveness described in Annex 4. An adaptation of these factors to the unique circumstances of each board leads to the following as factors important for board performance:

- Board guidance and management (leadership, planning, self-assessment of performance);

- Quality of members (member recruitment, selection and development);
- Quality of support services (information for the board's deliberations and administrative support for the board);
- Appropriateness of the board's committee structure;
- Quality of the board's relationships (with the management and staff and other key stakeholders); and
- Management of board and committee meetings.

The following comments are impressions (gained in the most part from the EMRs and their follow-up by the centers) of how the CGIAR boards operate in terms of these factors.

- Board guidance and management. The primary sources for board guidance are the chairperson and the director. A CGIAR board's success or failure depends heavily on the leadership qualities of its chairperson and the nature of the relationship between the chairperson and the center director. Leadership qualities of the chairpersons vary across the centers and frequent changes in board leadership lead to shifts in the way the board is guided and how it conceives its future role. Many boards have too few members with strong board leadership potential. Selecting and grooming such individuals is a high priority need in most boards.

Most boards do not have mission statements distinct from the description of their role in the center's by-laws and board procedures. None have an explicit "board strategy," although a few (such as ILCA, CIP and CIAT) are in the process of examining their strengths and weaknesses which could lead to the development of such a strategy.

Planning the board's business is improving in the centers. CIAT took the lead in this area a few years ago. The importance of understanding client conditions and needs firsthand is recognized by most boards. IFPRI and IRRI hold one of their yearly meetings in a client country; others hold some of their meetings in developing countries away from their headquarters.

Few boards assess their own performance systematically. IRRI has used consultants to improve its operations. CIP's board is conducting a self-study with the help of consultants. ILCA has conducted a pilot workshop to identify the board's strengths and weaknesses; CIAT and

ICARDA have planned similar workshops. By and large, the EMRs remain the principal vehicle for assessing board performance periodically.

- Quality of members. The most serious constraint to board performance remains member recruitment, selection and development. The CGIAR nomination process is not as effective as it could be because of lack of uniform and reliable information on CG nominees. At the moment, the boards have substantial freedom in identifying who should serve as CG nominees on the board. The desire to have the nationals of the center's major donors represented on the board is widespread within the System, in some cases without careful consideration of the needs of the particular board. As a result, several boards are left with a nucleus of a few members who carry the main burden of conducting board business.

There are some promising signs, however. The boards have improved the work of their nomination committees. Many are studying carefully their future member and chairperson needs. Exit interviews and assessment of member performance has become a regular feature in some boards, such as ILCA. Also, when it becomes fully operational, the CGIAR Candidate Information System (CIS) could expand the pool of high potential candidates.

- Quality of support services. This has shown a marked improvement over the last five years. Board secretariat services have been strengthened in all centers, partly in response to strong recommendations from the EMRs. This has helped improve the quality of the information prepared for the board. IRRI has developed an exemplary documentation system for board deliberations. Timeliness of the information provided to the boards remains a problem, however. Most boards tackle this by devoting a day to reading before the board meeting starts.
- Committee structure. The current committee structure better meets the board's needs. In addition to the usual committees (executive, program, audit and nomination) some boards have formed standing or ad hoc committees geared toward a specific strategic area such as ICRISAT's technology transfer committee and IRRI's management committee. Board handbooks have been improved and many centers have reformulated the terms of reference of their board committees.
- Relationships. Practically all of the current boards have excellent relationships with the director and

his/her staff. Ex officio members from the host country play an effective role in facilitating the center's relations with government agencies. Generally speaking, board chairpersons are effective spokespersons for their center within the CGIAR and in other international fora. The CBC helps improve communication among the center boards.

ILCA and ILRAD have for years followed an effective collaborative arrangement between their two boards. The board chairperson and the director of one are automatically invited to attend the board meeting of the other in an observer status. This has helped strengthen the already good coordination between these two centers devoted to livestock research in Africa.

- Management of board and committee meetings. This varies across the centers. Some of the boards are fortunate to have chairpersons with outstanding meeting management skills. Level of participation by members is usually uneven, which partly stems from cultural differences among members. Relationships and comradery among the members of the same board are usually good. Factionalism is an exception rather than the norm. More equal sharing of the board's workload among the members could improve teamwork, and this depends largely on having members who can contribute to board operations on an equal footing.

Areas requiring improvement. That the boards have improved their processes for managing board operations over the last five years is well substantiated by the EMRs and their follow-up by the centers. The report by a committee headed by Lowell Hardin (1984), a paper prepared by John Dillon (1987), and several initiatives by the CBC and the CGIAR Secretariat have contributed to the improvement of board procedures. But progress is uneven across the System and more needs to be done by each board.

In my opinion, five areas require priority attention by the boards and the System: level of policy, board planning, membership, interlocking boards and frequency of meetings.

1. Level of policy. It is said that boards make policy and management implements the policy. But the term "policy" is so broad and vague that practically any decision by the board could fall under this heading. Because the CGIAR boards have limited time, they need to operate at the "right" policy level to maximize their efficiency. This applies to their policymaking as well as oversight role.

Policy proposals that come before a board fall into several categories. At the top of the pyramid are decisions on

institutional strategy (guiding values and principles, mission, major businesses, priorities, etc.). This is followed by lower level strategies on specific programs. Next come decisions on management policies (for finance, personnel, administration, etc.) Still lower on the ladder are specific policies on projects, and tactical decisions on day-to-day operations and center-wide rules and procedures (Chait and Taylor, 1989).

A board should spend most of its time on the higher level policies. Its primary focus should be on the appropriateness of the center's strategy and the management's success in implementing it. Program oversight would be in the form of tracking the implementation of center strategies, not the details of project work. This does not mean that a board should not be working on other policies, some of which are required by the center's by-laws. However, in terms of allocation of their time, they should be operating most of the time at the highest policy level.

2. Board planning. Implementing the above suggestion requires that the boards plan their work carefully in terms of agendas, background information from the management and the workload of the committees. It also means that a board needs to plan its membership composition in such a way as to operate at a higher strategic level.

3. Board membership. A board operating at the institutional strategy level requires members who are broad strategic thinkers and who also understand the challenges faced by a CEO. Priority should be given in membership to individuals who are or have been in CEO positions similar to that of the directors of the centers.

This demands a major effort on the part of the centers and the System to identify and recruit such individuals for membership in CGIAR boards. The Candidate Information System (CIS) started by the Secretariat is a move in the right direction. The donors and the center boards need to exercise tight discipline in avoiding representation (or the appearance of representation) on the boards. Some donors are able to monitor the work of a center by sending observers to board meetings. This could become a wider practice.

The question of CGIAR nominees should also be re-examined. One issue is whether more of the board members should be nominated or designated by the CGIAR, as suggested by Warren Baum (1986). Another is what flexibility a center should have in selecting the CGIAR nominees.

Neither issue should be considered, however, until the Group can come up with a more effective mechanism for identifying its nominees. Those involved with the current process seem to be dissatisfied with it, but no one has suggested a better

alternative. So long as the CGIAR nominees continue to serve in their individual personal capacities once they are elected to the board (and not as representatives of the CGIAR), the process aims principally at ensuring that each board has at least a few persons knowledgeable about the CGIAR and its concerns. This objective can be achieved by better assessment of candidates who can serve as CGIAR nominees.

The objectives of having CGIAR nominees on the boards as well as the mechanics of identifying them need further study. The Group may wish to discuss this issue after some experience is gained in improving the current process through the CIS.

4. Interlocking boards. Several of the CGIAR boards are working on the same commodity (e.g., IRRI and WARDA, ILCA and ILRAD) or region (e.g., the four centers located in Africa). Policy coordination across these centers is currently handled informally by the centers concerned and by TAC and the CGIAR. Interlocking boards (i.e., having several individuals serve on the boards of two or more centers with similar missions) could strengthen policy coordination. These members could be designated by the CGIAR, in consultation with the boards of the centers concerned. Such members could continue to serve in a personal capacity, not as representatives of the CGIAR.

5. Frequency of meetings. Operating at a higher policy level should enable the boards to conduct their normal business in the present two-meetings-a-year format, one for the annual meeting of the board and the other for committee work. When a center is facing major challenges or is in the process of making major strategic changes, a third meeting may become necessary, as many boards have found to be the case during their strategic planning and external review years. Reducing the meetings to one-a-year may be counterproductive as this would introduce major discontinuities in the members' attention to the center's affairs. The work of the committees could be scheduled more flexibly (in terms of timing and location) by each committee depending on its workload. The executive committee should continue to meet more frequently than the others, as is the current practice.

A need for more frequent meetings might work against the desire to attract individuals who can contribute to a more strategic board. If there was a tradeoff, my choice would be to have a more strategic board.

Accountability of the boards. Formally, the accountability of a CGIAR center board is as defined in its articles of incorporation and agreement with the host country. The board and its members may be formally liable for the actions of a center under the laws and statutes of incorporation, which,

incidentally, has prompted them to purchase insurance to limit the liability of individual members.

This formal accountability usually does not apply to how well a board performs its principal functions. In terms of accountability for its performance, like the boards of most non-profit agencies, a CGIAR center board is largely a self-accountable body.

However, the center boards are expected to act as if they were accountable to the CGIAR. This is an implicit notion of accountability to "shareholders," not an explicit system of accountability where, collectively, the shareholders (in this instance, donors) have the power to replace a board if they feel that the board is not performing as well as it should.

The center boards also act as if they were accountable, in varying degrees, to the centers' clients, collaborators and staff. Each member, serving in his/her personal capacity, reinforces one or more of these accountabilities. This is reflected clearly in the questionnaire surveys of the members of four center boards conducted as background to recent EMRs.

The center governance system, like the CGIAR itself, is based largely on trust and confidence. The boards' accountability to the CGIAR is informal. The CGIAR's decisions, as the CGIAR itself has no legal personality, are binding neither on its members nor on the boards. Thus, the strength of the centers' and their boards' autonomy is not matched with a similarly strong mechanism of accountability to donors. The EMRs are the only major mechanism through which the CGIAR receives periodic information on a board's performance. Individual donors express their approval or disapproval of a center's (and its board's) work through their financial contributions to that center.

The discussion in the earlier parts of this section on board performance indicates that considerable improvements have been made by the boards themselves in the way they perform their duties. The suggestions made above could further improve their performance and enhance their self-accountability.

A question still remains, however, on whether the System should have a stronger and more direct means of accountability of the boards to the CGIAR. The strongest and most direct way of ensuring the boards' accountability to the CGIAR would be by having the CGIAR or a body selected by the CGIAR appoint/dismiss the members of each board (with the exception of ex-officio members from the host country) and supervise the work of each board. Less strong and less direct means would include options such as the following:

- The CGIAR (or a body appointed by the CGIAR) could appoint part of the membership of each board (instead of the full board) and provide general supervision.
- The donors of a center could be directly represented on the board, not in an individual personal capacity but as representatives of the interests of the donors. This could be done either by covering all donors to a center on a formula basis (as in the cases of the board of directors of the World Bank and the International Monetary Fund), or by having only the major donors appoint representatives.
- The CGIAR could ask each center to include in its constitution and board rules of procedure a statement on the accountability of the board to the CGIAR. (This is not now spelled out explicitly in the centers' by-laws.)

My view on this question is that, to the extent a strengthened system of self-accountability places significant emphasis on accountability to the CGIAR, there is less need for instituting stronger and more direct means. Any attempt to introduce direct accountability of the boards to the CGIAR, as in the examples listed above, would necessarily take something away from the autonomy of the centers. Reduced center autonomy could lead to increased bureaucracy and could constrain entrepreneurship and initiative. Thus, efforts should be directed in the first instance toward strengthening the boards' self-accountability and having them increase their accountability to the CGIAR (perhaps by modifying the by-laws of the centers, as mentioned above). If the CGIAR decides to undertake a larger-scale structural reform in center governance and management (see below), the question of board accountability should be revisited.

Is there need for further structural reform? The fact remains that, even with the implementation of the suggestions made above, the centers will continue to be director led, rather than board led. This is because the director is the most powerful individual in a center. He/she works full time, has access to all the center's resources, is the most knowledgeable about center and System developments and has greater potential to create visions for the center than any board member.

Under the current system, the role played by the boards is mainly reactive. The boards provide the director with guidance by serving as a "sounding board" on matters of strategy and policy. Policy proposals are prepared by the director and his staff (sometimes in response to a demand from the board) and are discussed by the board. In other words, the board's agenda is controlled more by the director than by the board itself. There are exceptions, but this is the general norm.

Thus, the boards do not "manage" the centers. Management authority is delegated to the director. The boards play a supervisory role.

This raises a question on whether the center director should also serve as the board chairperson. Many corporate boards follow this model, but the practice is being phased down in many parts of the business world in favor of having more outsider members on the boards and separation of the roles of the chief executive officer (CEO) from that of the chairperson. This separation provides greater opportunity for ensuring the accountability of the CEO for his/her performance.

Consideration of alternative models of governance must therefore start with answers to two questions: who should manage the center and with what level of authority; and who should provide supervision and how tightly?

Regarding the first question, the strong director (as compared with a strong board) model currently employed in the System has a great deal of appeal. The complexities of managing a center under highly uncertain conditions requires flexible management that can best be done by one person. Management authority could be more widely distributed (such as by the appointment by the board of a management team), but this does not represent a radical departure from the current model in the CGIAR. At present, most boards either approve or are consulted on the appointment of the second-tier managers who work with the director. Direct appointment of the second-tier managers by the board could blur the managers' accountability.

Regarding the second question, the options are to have either a one-tier (as at present) or a two-tier board. Having two supervisory boards, the lower board directing one institution and the higher board supervising the work of several lower boards, is a possibility.

The two-tier model has at least three variants that could be considered. First, some of the existing center boards could create lower boards (or board committees) to supervise the work of their geographically dispersed operations. One example that comes to mind is to have a lower board (or board committee) supervise the work of the ICRISAT Sahelian Center in Niger. We understand this option is being explored by the ICRISAT board. Second, a higher board could be set up (on a geographic, commodity or activity basis) to supervise the work of several of the existing center boards. This is tantamount to creating larger centers composed of several present centers. One implication of this arrangement is that the existing centers tied to a larger center would lose some of their autonomy, in favor of that of the confederation. Third, all CGIAR-supported center boards could be tied to a single supervisory board. This board

would have a hands-on involvement in the supervision of the work of all the centers. The autonomy of each of the individual centers (and their boards) would be reduced. Consideration of this option would require rethinking the role of the present system-wide organs such as the TAC and the Secretariat.

Incidentally, the center director could serve as the chairperson of the lower board in the last two options mentioned because there would be a higher board to ensure his/her accountability.

The second part of the supervision question raised above deals with the "tightness" of the board's supervisory role. The view expressed in the earlier parts of this section calls for a tighter but more focussed supervision by the boards. Under a single-tier model, a board and its committees would operate at a more strategic level than at present, both in terms of programs and management. The board would help ensure that the center's programs are on the "right" track, that there is visible impact, and that the management has put in place effective systems and policies for managing staff and activities. Under a two-tier model, the higher board would operate at a more strategic level than the lower boards.

Attention has been drawn to two-tier governance alternatives because the System is currently undergoing a major change with the CGIAR's consideration of the activities of several non-associated centers. To the extent that this leads to major strategic and structural changes in the work of the existing centers, alternative governance models should be considered as a means of ensuring effective coordination of strategies and policies across a group of centers and strengthening the accountability of the boards to the CGIAR.

Conclusions on governance. There has been a marked improvement in recent years in the way the boards manage their affairs. In the area of policymaking, most boards play a reactive role. Many boards have improved their oversight of programs and management. The centers remain largely director led, rather than board led.

Boards can further improve their operations by operating at a higher strategic level, better planning their workload and membership and adjusting the number of their meetings to the requirements at hand. Improving board membership remains a critical need. The manner in which CGIAR members are identified and appointed needs rethinking. Some centers can benefit from interlocking board arrangements.

The suggestions made could further improve the boards' self-accountability. An attempt to introduce direct accountability of

the boards to the CGIAR would reduce the centers' autonomy and lead to increased bureaucracy.

Consideration of a broader structural reform on center governance should await the further examination of the non-associated centers by the CGIAR and the options on the organizational structure of the System. The one-tier board model has served the centers well. Two-tier models could be considered if major strategic and structural changes are contemplated in the work of the existing centers.

2.3 Leadership

The preceding section emphasized the crucial role played by the director in guiding a center. Perhaps more than any other personal attribute, effective center guidance depends on the director's leadership ability. The stress on leadership is perhaps more important in the CGIAR than many other institutions because of the nature of the centers' main business (research leading to innovation) and the complexity of the context in which the centers operate (e.g., internationality, isolation, funding uncertainties, frequent shifts in System priorities etc.).

In a recent article Warren Bennis (1989, p.7) makes the following distinctions between leaders and managers:

"Leaders conquer the context - the volatile, turbulent, ambiguous surroundings that sometimes seem to conspire against us and will surely suffocate us if we let them - while managers surrender to it. There are other differences as well, and they are enormous and crucial:

- The manager administers; the leader innovates.
- The manager is a copy; the leader is an original.
- The manager maintains; the leader develops.
- The manager focusses on systems and structure; the leader focusses on people.
- The manager relies on control; the leader inspires trust.
- The manager has a short range view; the leader has a long range perspective.
- The manager asks how and when; the leader asks what and why.

- The manager has his eye on the bottom line; the leader has his eye on the horizon.
- The manager imitates; the leader originates.
- The manager accepts the status quo; the leader challenges it.
- The manager is the classic good soldier; the leader is his own person.
- The manager does things right; the leader does the right things."

According to Bennis, "leaders manage the dream" (Bennis, 1989, p. 8). A similar distinction was made between leadership and management by Clark Wilson in the 1987 IRRI EMR: "Managers are goal driven; leaders are change driven" (IRRI 1, p. 80).

Bennis' distinctions put the differences between managers and leaders more sharply than in reality. CEOs play both roles, but the leadership dimensions of their work take precedence over their managerial role. Leaders manage managers and the effectiveness of their leadership depends on the competence of their managers.

Leadership in the centers. One important message of the EMRs is that the directors of CGIAR centers are in virtually complete control of their institutions. Sources and styles of leadership of the directors differ across the centers, as do their management abilities, but there is no doubt about who is in charge. The following quotes from the EMRs illustrate the panels' perception of the leadership qualities of the directors:

- "The DG is in complete command, as he should be... He maintains extraordinarily close control over budgetary and financial matters"; (ICRISAT 1).
- "The management organization is hierarchical and somewhat autocratic, with the DG handling important policy issues, including budgetary allocations, alone" (IITA 1).
- "The DG is a capable, industrious and dynamic leader. His management style is more decentralized than many in the CGIAR system" (CIAT 1). "...forceful leader, who has imparted to the center his own strongly held values regarding the critical importance of CIAT's mission..." (CIAT 2).

- "Greater delegation of authority and responsibility from the Director to the other staff would be useful" (IFPRI 1).
- "The DG's management style is flexible and accommodative. ...Staff at all levels feel they can influence decision-making" (ICARDA 1). "...strong (bordering on authoritarian) leadership ... personalistic, top-down and bureaucratic" (ICARDA 2). [Note the difference between the perceptions of the two panels on the same director.]
- "The present organization is ... highly centralized.... The DG personally heads the NARS [program] in which there is no hierarchy or other formal structure: All the Senior Research Officers and Senior Research Fellows report directly to the DG" (ISNAR 1).
- "...We see him as...one who has brought about significant changes...introduced a more participatory management process...His humanitarian qualities and his effectiveness as a communicator also contribute to his leadership capability" (IRRI 1).
- "The DG has provided effective leadership in many areas, including preparation of the draft strategic plan...is a strong leader, with a positive, progressive and open management style" (CIMMYT 1).
- "...CIP's founding director and visionary leader...has shaped and molded CIP to a strong, mission-oriented institution staffed with competent and dedicated individuals. His imprint on the institution can be seen in every facet of CIP's operations. ...That he is a strong authoritarian leader is obvious to all who know him" (CIP 2).

That the directors have a firm control over the centers does not thereby confirm their effectiveness as leaders. Except for a recent few, the EMRs have not differentiated leadership from management in the sense done above. Nevertheless, each of the directors in the System exhibits a unique blend of leadership and management. A few perform both roles admirably well. Some are outstanding leaders but poor managers, others excel in management but are not as strong in institutional leadership. Fortunately for the CGIAR (and the boards) no current director is both a poor leader and a poor manager.

Features of leadership. Creating visions is not daydreaming. It requires a complete understanding of the context, insight into the complex relationships among factors germane to the situation and a strong trust in one's intuition about what can work.

Several of the directors knew the research business firsthand before they joined the System because they were outstanding scientists themselves. They had proven their scientific leadership potential well before becoming a director. Thus, an important source of institutional leadership was their mastery of the research business and ability to set scientifically sound agendas.

This emphasis on mastery of the research business is a feature of the U.S. private research sector. The most successful industrial laboratories are all led by scientists or engineers with substantial laboratory experience.

Vision-setting is not a solitary activity. Leaders sound-out their visions with others before these are turned into realistic agendas. They also are receptive to visions and agendas offered by others. For many of the directors, participatory center-wide strategic planning offered an opportunity to explore alternative futures for their centers.

Communicating visions to others effectively is another feature of leadership (Bennis and Nanus, 1985). Many of the directors excel in this area. Their personal charisma and mastery of communication is recognized by many, as noted in the quotes cited above from the EMR panels.

Ability to stick to the agendas is another dimension of leadership. Several directors have led their centers for years through a set of guiding values. Some directors, though quite new in the System, have stayed the course they set a few years ago.

Control over information is an important source of leadership and influence. The directors of all the centers search, receive and process information vital to their understanding of the internal and the external environment of the centers. This places them in a unique position in their centers to dream new futures and manage their dreams.

Leadership styles. The styles of leaders are often described in terms of authoritarianism. At one end of the spectrum are autocratic leaders who tell others what to do (and often how to do it), and at the other, democratic leaders who base their decisions on the collective will of their colleagues, with combinations of these in between. Several variations of this model have been developed. Ken Blanchard's "situational leadership," for example, defines leadership styles in terms of the leader's "directive behavior" (structuring, controlling and supervising) as well as his/her "supportive behavior" (praising, listening and facilitating). Thus, leaders can be directing and supporting at the same time, and change their style depending on the specific circumstances (in particular, the "development level") of each subordinate (Blanchard, 1985).

Several of the present and some past directors were described by the EMR panels as highly authoritarian. Their level of influence on decisions was observed to be very high and the span of their decisions covered all areas of center activity. Decisionmaking was not judged to be sufficiently decentralized to other managers.

Others were seen to be more participatory. Their leadership style was described as "more decentralized than many" (CIAT 1, p.12), or as "positive, progressive and open" (CIMMYT 1, p.14). Some directors delegate many management responsibilities to their staff and encourage a participatory approach to making decisions (through center-wide committees).

There are several caveats to these generalizations: the same yardsticks are not used in all centers; the styles of panels differ (some are more frank than others); references to personal attributes are sometimes deleted from the reports; styles of directors may have changed since the time these observations were made; the panels may not have fully understood the complexities of leadership in the centers, etc. Therefore, attribution in the EMRs of a particular style to specific individuals is only tentative.

The conclusion that emerges from these observations and other impressionistic evidence on the styles of centers' leaders is that most of the current directors would score high on Blanchard's "directive behavior" dimension. Several would also score high on the "supportive behavior" dimension. As stated earlier, there is little doubt about who is in charge in the CGIAR centers. The power and influence of the director on what goes on in a center are very high. In a few cases all decisions, even small ones, seem to require explicit or implicit approval ("How would the director have decided on this?") of the director.

What is wrong with authoritarian leaders? Being authoritarian is not a sin. In fact, an authoritarian leader can often get a job done more efficiently than a democratic leader. As the 1989 CIP EMR puts it: "Why bother with bureaucracy and red tape when decisions can be made quickly and ideas can be put into action immediately, without fanfare?" When decisionmaking is centralized in one person, the values of that person dominate the institution. So long as these values and visions are "right" and so long as the leader can motivate his staff, work will get done in the most effective and efficient manner.

The institution's excessive dependence on one person for decisionmaking, however, also has serious disadvantages: the values and visions of the leader may not be "right," the leader may be reluctant to change, other managers do not get an opportunity to develop their own leadership potential, creativity may be constrained when the scientists are given little autonomy,

the institution may crumble when the leader leaves, etc. It is for these reasons that some EMRs consider preparing the center for a leadership change as the greatest organizational challenge facing the center. It is also for these reasons that the first EMRs of ICRISAT, IITA, ISNAR and IFPRI called for greater decentralization of decisionmaking.

In some situations (for instance, when setting up a new institution or hiring a manager in turbulent times) an authoritarian leader is much more likely to get the immediate problem solved effectively than a democratic manager. However, without proper checks and balances, an authoritarian leader who stays in the job for a long period could take a center in entirely wrong directions.

The checks and balances needed can come both from above and below the leader. In the case of the centers, the directors are formally accountable to their boards. Because the boards are largely self-accountable, to the extent that his/her board is weak, a strong director has a relatively free hand in managing the center. This is one reason I did not favor in the preceding section having the director serve as the board chairperson under the CGIAR's current governance system. In part, it is also why further improvements in board performance were stressed.

Informally, the directors are also accountable to the CGIAR through the external reviews and the resource allocation process. However, this is in the form of accountability from a distance and focusses only on the broadest aspects of center strategy and operations. It cannot be a substitute for continual oversight by a board which is intimately familiar with the complexities of operating the center.

The managers immediately below the director can also serve as a check and balance on his/her leadership. To the extent that positions in this second tier are staffed with effective followers (see below), the risks to the center and the System of having authoritarian leaders would be reduced.

Leaders need effective followers. Leadership is but one factor in organizational performance. The day-to-day work of a center is managed by those who follow the lead of the director. The quality of the staff occupying the second tier of management accounts for much of the success of the center and the degree of check and balance provided to the director.

In a recent Harvard Business Review article Robert Kelley (1988) introduces an interesting typology of followership patterns:

- Sheep (passive and uncritical, lacking in initiative and sense of responsibility);
- Yes people (dependent on a leader for inspiration, deferential, even servile);
- Alienated followers (critical and independent thinkers but passive in carrying out their role, often cynical, seldom openly opposing the leader's efforts);
- Survivors (perpetually sample the wind, their slogan: "better safe than sorry"); and
- Effective followers (think for themselves and carry out their duties with energy and assertiveness; risk takers, self starters and independent problem solvers).

According to Kelley, effective followers: "manage themselves well; are committed to the organization and to a purpose, principle, or person outside themselves; build their competence and focus their efforts for maximum impact; and are courageous, honest and credible" (1988, p. 144). Thus, effective followers have qualities similar to those sought in leaders. In an organization filled with effective followers, the leader's role is one of orchestrating and overseeing organization-wide change, with strong support from individuals who can lead changes in different areas.

Several of the EMRs have been complimentary of the senior managers who work directly with a center director, but the comments made in the reports are not based on a study of the effectiveness of senior managers as potential leaders. Frequently made EMR recommendations on the need for increased participation in decisionmaking and decentralization of authority from the director suggest that the leadership potential of most senior managers in the System is not being developed sufficiently.

The boards have an important role to play in ensuring that the centers are staffed with effective followers. Staff appointments and dismissals at the tier below the director should always be done with the endorsement of the board.

Transfers of senior managers among the centers can also be useful for the System. A new challenge and a new boss can stimulate the leadership potential of senior center managers.

Tenure of the directors. How frequently should a CGIAR center change its director? There is a feeling across the CGIAR community that directorship should not be seen as a tenured position, as in universities, and that director tenures should not normally go beyond ten years.

My view on this question is that all directors should have fixed, renewable appointments (the length of each appointment determined by the board), but that a director's total tenure at a center should depend only on his/her effectiveness as a leader. So long as the leader continues to generate new and timely agendas for change and manages the change process effectively (that is, as demonstrated by results), he/she should be allowed to stay. This is a judgment the boards can make and to make such judgments they need to improve the way they assess the performance of the director. Change for change's sake is not defensible as the costs to the center and to the System of changes in leadership are very high.

Having said that, it is worth noting that recent major changes in center strategy (and structure) have followed the appointment of new directors (see Section 4.3). This places an important burden on the boards. If, as suggested above, the boards operate at a more strategic level, they would become better judges of whether strategic change is necessary and if such change can be initiated by the current director.

The initial year of a director's tenure is usually devoted to understanding the institution and its concerns, establishing relations with key stakeholders and initiating improvements. The last year is a transition year. This means that a five-year tenure is too short for maintaining stable and effective leadership.

At the other extreme, a twenty-year tenure might be too long for the director of a research institute. An individual can leave his/her imprint on the center in as short as five years. Center strategies could require a major overhaul every eight to ten years. The boards change completely after every six years. And the job of director begins to lose some of its challenge after the initial eight to ten years. It would take a truly exceptional individual to stay abreast of the rapid changes in science, modify his/her visions on the future of the institution as circumstances dictate and remain capable of responding to the challenges of the job of director after ten to fifteen years.

Although this suggests that, other things being equal, a tenure of about ten years might be desirable for a typical CGIAR center director, I believe establishing a rigid system-wide norm on director tenure would be counterproductive. There are two main reasons for this. First, a rigid system-wide norm would tie the hands of the boards who are in a better position to make informed decisions about this matter. Second, a fixed tenure would rule out the continuity of the truly exceptional individual who the center and the System would want to keep at the helm as long as he/she remains effective as a leader.

It would be to the System's benefit to keep the successful directors affiliated with the CGIAR after they complete their assignment with a center. Throughout the CGIAR's history very few directors have moved from one center to another. Encouragement of transfers in directorship could shorten tenures at one center, while providing a successful director a new and important challenge.

What is not understood well in the CGIAR community is that being the director of a CGIAR center is in many ways a thankless job. True, there are rewards and challenges, but the demands and expectations of others on the directors far exceed the capacities of even the most outstanding leaders in the System. Yet, they do it, because they are committed to the cause and because they are confident they can make a difference.

Conclusions on leadership. The directors of CGIAR centers are in almost full control of their institutions. Some of the directors are excellent leaders, and some excellent managers. Few have both attributes. Most of the directors exhibit strong "directive behavior" (i.e., structuring, controlling and supervising), a few are also strong on "supportive behavior" (e.g., praising, listening and facilitating).

There is need for decentralizing decisionmaking in many centers. This can help increase the autonomy of the scientists, improve entrepreneurship and create a climate more conducive to innovation.

The challenge to the directors is how to balance their leadership and management roles. Having a cadre of effective followers would help reduce the directors' management burden and allow them to devote more time to managing the dream instead of the work.

The tenure of a director should depend on his/her effectiveness as a leader. Decisions on tenure should be left to the boards instead of having a system-wide norm. The System should also encourage movement of successful directors from one center to another.

2.4 Strategy

The term "strategy" has been used widely within the CGIAR community only during the last five years. The 1985 TAC paper on CGIAR priorities and strategies marks an important beginning, as it clarified the mission of the CGIAR, its clients and major businesses. Two successive external reviews (ILCA in 1986 and IRRI in 1987) also represent a turning point as they drew the attention of the CGIAR community to the need for well-justified center strategies with clearly defined foci.

Other system-wide developments also contributed to the shift of attention to the strategies of the centers. A paper by Vernon Ruttan (1987) on the System's external review processes called for less frequent (every eight to ten years) external program reviews that focus primarily on the strategic aspects of centers' work (as compared with operational details of center programs.) The move toward a CGIAR resource allocation system with a longer time horizon (about five years) emphasized the need for center plans that show the long-term strategic directions of the centers and provide a sound rationale for the proposed medium-term programs. The management training programs organized by the Secretariat starting in 1986 for senior managers from the centers also played a role in increasing the awareness of the managers in the role of strategy in overall center performance. The strategic planning workshops conducted by the secretariat staff in interested centers was another factor contributing to the dramatic increase in "strategizing" across the system.

The start of what might be called the "strategic planning era" in the CGIAR follows, with about a ten-year lag, the rise of strategic planning in the corporate world. The 1950s and 1960s were dominated with forecasting-based long-range planning in the private sector and various forms of planning, programming and budgeting systems (PPBS) in public sector institutions. Strategic planning enabled institutions to define their missions and directions with more emphasis on the future than the past (Porter, 1987).

This is not to say that the centers did not have strategies until the mid-80s. If, as Mintzberg and Waters (1985) argue, strategies reflect patterns in streams of organizational actions, one can deduce the strategies of a center at any time by examining its past actions and discovering the patterns that show consistency over time. Therefore, the question of whether a center has a strategy is moot. The questions are whether the organization is conscious of it and whether the strategy is effective. In the final analysis, the written word in the plan means nothing if it does not lead to consistent organizational action.

In their early years, the missions of IRRI and CIMMYT, the oldest of the thirteen CGIAR centers, were simple and clear, choices in research techniques were limited (plant breeding), clients and their needs were obvious, other institutions with similar missions were very few in number and funding was not a major constraint. Thus, the choice of strategy was relatively more straightforward and (whether it was written in a plan or not) easier to communicate to the stakeholders and the staff.

The same was true of the initial years of some of the new centers. ISNAR was exploring a niche for itself during its first five years. ILCA was also using an exploratory (partly

opportunistic) strategy during its first ten years, to find out what interventions could work best in Africa.

The situation is radically different now: funding is more scarce, the goals of the system are broader, the needs of the centers' clients are more diverse, choices in technology are more complex, there are many more institutions with similar goals, the centers' environment is changing more rapidly and the donors are less patient with "exploring alternatives." Thus, there is greater pressure on the centers for long-term planning and for clarifying their strategies.

The long-term planning era. Prior to the start of the strategic planning era in the CGIAR the centers prepared long-term plans and submitted them to TAC. These plans were of varying quality and were not explicitly discussed or endorsed by TAC or the CGIAR. Most centers spent little time in preparing their long-term plans. (As a senior manager from a center told us: "We used to ask a colleague to go away somewhere for two weeks and draft the plan.") The CGIAR's resource allocation system had a short-term orientation (annual programs and budgets) and long-term plans did not play a major role in budgetary decisions.

Some of the centers approached long-term program planning with greater rigor. A few used outside consultants in preparing their plans. CIP started a Profile series in 1979, which included detailed long-term projections of work planned in each program thrust. IFPRI, IITA, ICRISAT and other centers produced long-term plans as well. More often than not, these plans focussed exclusively on what was planned in each program, at the expense of considering center-wide strategic issues. They failed to show where the center was headed, who were its clients, what needs of the clients it should meet, what impact it should make, what is the best way to generate such impact, etc. The following quote from the 1983 IITA EMR illustrates this point:

"...it appears that the overall strategy of the Institute needs clarification. Goals and objectives seem to reflect funding opportunities. Insufficient debate has been devoted to whether IITA can be both a research institute for the humid and sub-humid tropics and an African agricultural development institute. The two objectives imply very different directions for the future of IITA. Choices of this nature should be explicit" (IITA 1, p. 16).

The 1989 CIP EMR makes a similar point: "What CIP does not have is a clearly articulated and fully justified strategy that shows where it is headed in the future, how it plans to get there and why the planned direction is the best among alternative paths that can be used" (CIP 2, p. 29).

The centers' approaches to strategic planning. Strategic planning was a learning experience for most of the centers. As there is no universally applicable model for the planning process, each center adopted a process that best fit its own circumstances. The following paragraphs illustrate the different approaches used by the centers.

- At ILCA the board played a strong role in the push to have a narrowly focused strategy formulated. John Walsh's appointment as the new director provided the climate for a new look at the center. The process was led by Walsh and involved, first, the preparation of background papers on strategic options. These were discussed with small panels made up of board members, outside experts and staff. The options were then discussed with representatives of ILCA's clients. As in the case of the other centers, TAC also commented on the draft plan.
- Changes in top management also provided the impetus for strategic planning at ISNAR, ICARDA and WARDA. The boards of these centers were involved with the process in varying degrees. In one case (at ICARDA) the board set up a Strategic Planning Committee. WARDA relied mostly on external consultants. ICARDA held intensive consultations with leaders of collaborating national programs. ISNAR spent the most time in clarifying the conceptual framework for the center's program.
- CIMMYT started its planning with a "planning to plan" workshop attended by senior managers and selected "strategic thinkers." Consensus was reached on a planning process which involved the setting up of several internal task forces to address strategic issues identified at the workshop. Successive stages of the draft were discussed with the full staff, representatives of major clients, other key stakeholders and the board. The process was led by the director and included a background study of CIMMYT's organizational culture and the use of a quantitative resource allocation model with explicit decision criteria.
- At IITA the focus was more on program strategies. Task forces were set up for each program, led by outside experts and attended by program staff.
- CIAT's process was also oriented mostly toward strategies for each commodity program, but it was preceded by the formulation of a center-wide strategy. Program strategies were formulated to fit the center-wide strategy. The process involved an extensive study

of CIAT's organizational culture and dialogue with key stakeholders.

- Planning consumed more time at IRRI than at any other center. The process started in 1986, but the third draft of the strategic plan was the subject of heavy criticism by the external review panels in 1987. The process was restarted in 1988 by Klaus Lampe after he became director. As in other centers, the plan was prepared with intensive staff involvement. IRRI also invited external panels of experts and clients to comment on the draft plan. The process was completed in 1989.
- CIP and IFPRI started their strategic planning with intensive self-studies geared toward assessing internal strengths and weaknesses. Both of these centers are in the process of preparing their strategic plans, as are ICRISAT and IBPGR.

The above account of center experiences is intended to be illustrative, rather than a full and complete account. Thus, it glosses over many important details which the reader can obtain from the respective centers.

Several process related conclusions emerge from the strategic planning experiences of the centers.

First, although the processes were mostly managed by the directors, by and large they were not dominated by them. Thus, the visions in the plans represent more a collective view than those of a single individual.

Second, in most of the centers the boards have played a constructive, supportive role in the preparation of strategic plans by management and staff. In one case (ILCA) the board itself played a key leadership role in having the center's operational mandate narrowed. In others, the boards provided useful feedback to the management on successive drafts. In a few cases, the boards were not sufficiently critical of the center's draft strategies in early stages, as reflected by criticisms of board-approved draft strategies by the external review panels.

Third, making the external program reviews more strategic has induced the centers to engage in intensive planning prior to their respective external reviews. We are not sure if strategic planning would have been carried out with such intensity had the external reviews continued to have their major focus on operational (as compared with strategic) matters.

Fourth, practically all the centers adopted a participatory approach to planning. The balance between "top-down" and "bottom-up" elements in planning varied across the centers. A purely

bottom-up approach (like the early versions of the IRRI and ICARDA strategic plans) often led to maintenance of the status quo and limited the exploration of radical options. It also limited the possibilities for drastic shifts in priorities across programs (as in the case of CIAT). In no case was the approach purely top-down.

Fifth, the centers found it valuable to involve their key external stakeholders in the planning effort. This enabled them, for example, to better assess the needs of their clients and understand the concerns of their major donors.

Sixth, the plans varied in the amount of their detail. Most of the plans had more detail than what is typically included in a strategic plan. We attribute this to the desire of the centers to justify their choices on institutional as well as program level questions. Such justification is required by the external review panels. It is also a valued attribute of the System (usually called transparency). Thus, most of the plans cover the key strategic concerns and some operational implications of the strategic directions chosen. For this reason, several of the centers have found it necessary to prepare shorter versions of the strategic plans for discussion with the board and the external review teams.

Benefits and costs of planning. The external review panels and TAC have begun querying the centers on the cost of their strategic planning efforts. There is a perception that the planning processes are taking too long and the centers need to find ways of streamlining their planning, so that time devoted to operations would not be constrained seriously.

There are no firm data on the true costs of planning at the centers. CIAT estimated that the external costs of its strategic planning (consultants, cost of invitees to meetings, etc.) was in the order of U.S. \$90,000. This does not include the opportunity cost of the time spent by the board, management and staff on planning-related activities. The cost of the IITA plan was \$300,000 (IITA 2, p.20). Many believe that the real cost of IRRI's three-year strategic planning effort is in the millions of U.S. dollars.

These costs would surely be justified if the effort leads to avoidance of costly mistakes in the future. Also, planning usually serves purposes other than the production of a document.

At CIMMYT, strategic planning enabled the center to initiate an institutional change process. It helped reduce the "two centers in one" climate, unified staff behind an institutional "CIMMYT cause," improved communication between management and staff, helped reconfirm some traditional CIMMYT values and question others and enabled everyone to understand the rationale for CIMMYT's existence and for the changes in priorities. As a

result, CIMMYT, in my view, is better prepared as an institution to implement the resulting strategy than if the strategy had been prepared with less involvement of staff and other stakeholders.

The same can be said of the planning efforts of many of the other centers. At IRRI recent efforts in strategic planning erased the mistakes of the earlier stage and paved the way for structural reforms in management, including a major downsizing effort. At CIP, the self-study, which served as the first stage of this center's strategic planning effort, helped improve internal processes of management and prepared the center for the next stage in its evolution under different leadership.

Thus, the costs of planning need to be weighed against the benefits accruing to the centers from the process. In my judgment, the potential benefits justify the high start-up or learning costs of the strategic planning efforts of most of the centers. If one key goal of management is to have the institution's strategy reflected in the actions and behavior of all of its staff, the processes used by the centers have contributed substantially to the realization of this goal.

While the initial learning costs of planning were high, the costs should be lower in the future. Strategic planning is not a one-shot exercise; it is a continuous activity. The experience gained so far should enable the centers to establish non-bureaucratic mechanisms for continuous scanning of the internal and the external environment so that corrections can be made in strategic directions in a timely manner.

Conclusions on strategy. Strategic planning has improved significantly in the centers during recent years. The processes used by the centers were mostly participatory (i.e. involved staff). The centers sought the views of their major stakeholders systematically. The boards played a constructive and supportive role. The planning approaches used enabled several centers to initiate institute-wide change processes which went beyond specification of goals and priorities of programs. While the initial costs of strategic planning were high, these should be lower in the future as the centers will have learned from their first experience.

3. MANAGEMENT OF RESOURCES

This section is concerned with how the centers manage the principal inputs they use for producing their outputs. Four such inputs are covered: human, financial, physical and information. Each center strives to attract and maintain the level and quality of resources required by its strategy. The discussion below focusses on the appropriateness of the centers' systems and processes for managing these four resources.

3.1 Management of Human Resources

It is a cliché, but human resources are the greatest asset of the centers. Excellence in research depends almost exclusively on excellence in people. Attracting and retaining international and local staff of the highest calibre is a goal of every center. Compensation, personnel and career development policies and procedures of the centers affect staff productivity and morale. Overstaffing leads to inefficiency, and excessive turnover signals organizational weaknesses. Effective management of the centers' human resource function is important, both because salaries and benefits constitute the largest share of the centers' expenditures and because human resource management policies and practices can facilitate linking a center's strategy to the day-to-day activities of its staff.

While the centers have a relatively good record in attracting good international and local staff, traditionally, attention to the human resource management function has not been given high priority. For example, the oldest center in the system, IRRI, has not had a professionally qualified manager of the human resource function for many years. The same is true for many of the other centers.

The EMRs portray a generally mixed performance by the centers on human resource management. They argue that the function needs to be strengthened substantially in several centers, as illustrated by the following quotations. (It should be noted that most of the centers mentioned below have already made considerable progress in improving the management of their human resources since the time their respective EMR was conducted.)

- "A weak personnel office coupled with unit managers unskilled in the art of managing people is tantamount to 'blind leading the blind' in the management of human resources. The situation at ICARDA is not exactly this, because there are some good unit managers, but it is not too far from it" (ICARDA 2, p. 51).

- "IRRI's personnel policies and practices urgently need top level attention ...[these] are an institute-wide concern" (IRRI 1, p. 50).
- "CIP and its way of doing business need to be redesigned from the bottom up in order to get the job done. ...The many parts of CIP's personnel system that are touched by the change plan are in the process of being glued together. What needs to emerge is a system that links CIP's global mission statement, program goals, and annual work plans with performance planning and evaluation" (CIP 2, p. 52).
- "...there does not appear to be sufficient staff or sufficient leadership in the personnel area at CIMMYT to perform all the necessary functions" (CIMMYT 1, p. 39).

While considerable improvement is still needed in some of the centers, others have shown remarkable progress in this area in recent years. The EMR of ILCA noted in 1986, for example, that "personnel management has improved considerably since 1981-82. In contrast with the observations of the [previous] QQR, ... policies and procedures are better understood and are generally followed" (ILCA 1, p. 39). A similar improvement was noted at IITA: "The panel is impressed with the significant improvement in human resource management in recent years. The Board, Director General, Director of Human Resources and Manager for Employee Relations deserve praise for taking some hard but necessary decisions in 1987-88 and for implementing them with determination, keeping the Institute's long-term interests foremost in mind" (IITA 2, p. 33).

The situation in most of the other centers is portrayed generally as satisfactory. The EMR panels identified several areas that needed strengthening, but their overall impressions were by and large positive.

We provide below an overview of the centers' strengths and weaknesses in different aspects of human resource management. The following areas are explored:

- Organization and staffing of the human resource management function;
- Recruitment of staff;
- Compensation policies and practices;
- Personnel policies and procedures;
- Performance planning and assessment;

- Tenure and career development; and
- Downsizing.

Organization and staffing. Except for IITA, where the personnel function reports to the director, the personnel function is generally considered a part of "administration" in the centers and the personnel manager reports to the center's chief administrative officer.

The centers often distinguish the personnel management of international staff from that of staff recruited locally. The center's personnel office primarily handles the locally recruited staff. Personnel matters of international staff are usually handled by the senior administrative officer of the center or by a senior staff member working in the director's office. In the smaller centers like ISNAR and IFPRI and in a few of the larger centers the human resources department is responsible for both categories of staff.

The general theme of the EMR recommendations on the organization and staffing of the human resources function is that there is need for greater professionalization. Thus, the EMRs of ILCA, IRRI, ICARDA and CIMMYT recommended the hiring of a professionally qualified personnel manager to head the function. This person need not be recruited internationally (although the CIMMYT EMR recommends it) if a suitably qualified individual can be found locally.

The EMRs see human resource management as a dynamic and forward-looking activity geared towards the recruitment, retention and motivation of quality staff, instead of a passive operation concerned solely with administration of procedures. The stress on professionalization is geared toward equipping the personnel office with staff who know about and are experienced in modern practices in personnel management and can bring a forward-looking perspective to this area. It is for this reason that the EMR chapters on this subject are titled "human resource management" instead of "personnel management." We endorse this differentiation but, for easier reading, use both terms interchangeably.

Recruitment. Recruitment of local staff is generally handled well by the centers, as evidenced by the comments from the EMRs. Except for two cases, the EMRs have in general praised the centers for their objectivity in hiring local staff. The EMRs and the EPRs of larger centers like CIAT, CIP, CIMMYT, IRRI, ILCA, ILRAD and ICRISAT have also praised the quality of the local staff, especially those in scientific support positions. The CIP EMR panel dedicated its report to CIP's Peruvian staff.

The situation for recruitment of international staff is somewhat different. Each EMR has made suggestions for improving recruitment. These can be grouped as follows:

- The ILRAD EMR noted that "...there is little problem in recruiting younger scientists, but there are problems in attracting senior, more experienced scientists" (ILRAD 1, p. 26). We have a perception that in several of the other centers a post-doctorate appointment often leads to a senior staff position. The age distribution of the new entrants to scientific staff ranks is probably skewed toward younger people. (See Section 7.4 for a discussion of the implications of this.)
- The CIAT EMR pointed to difficulties faced in recruiting high quality senior staff: "...as the staff has grown, recruitment has become an important concern. The consensus seems to be that the quality of candidates attracted has declined somewhat for a number of reasons: perceptions about security in Colombia, the proliferation of dual-professional families, and some doubt about whether skills enhanced at CIAT are valued elsewhere" (CIAT 2, p. 39). This EMR recommends wider sourcing and more targeted recruitment, which are strategies suitable for other centers as well. These strategies are used widely in private sector institutions and international organizations.
- Two EMRs have recommended greater efforts to recruit women: "...there are...few women scientists at CIMMYT at present and [we] suggest that the center consider recruitment measures that could lead to an increase in their numbers" (CIMMYT 1, p. 46). "...the availability of women capable of filling senior or middle positions in research and administration are not that limited and greater attention to this area by the Center's management could increase the record over the year or two ahead" (ICRISAT 1, p. 32). We suspect the situation in most of the other large centers would not be significantly different from those of CIMMYT and ICRISAT. Targeted recruitment and personnel planning with specific goals for gender balance over a specific time period would be necessary for most centers to increase the number of women in senior staff positions.
- Another recurrent issue in some EMRs is the strong role played by the directors in the area of recruitment. For example, the 1984 IFPRI EMR recommended (and IFPRI implemented) "greater consultation with the program directors before appointments are made" (IFPRI 1, p. 22). The CIP EMR described the director's role in personnel management in the following terms: "The DG

has approval responsibility for all important appointments, promotions, salary increases, reappointments and terminations. He personally participates directly in virtually all personnel decisions concerning international staff" (CIP 2, p. 43). The 1984 ICRISAT EMR also made a similar observation: "The Director General of ICRISAT personally administers the activities relating to Principal Staff" (ICRISAT 1, p. 28).

Compensation. The EMR comments on the salaries and benefits of international staff show that the centers are competitive with each other and with comparable organizations operating in the same country. The centers obtain periodic salary comparison data from the Institute of International Education in New York, which administers the salaries and benefits of the senior staff of most centers. They also conduct their own analyses. These are discussed with the boards. The following are some sample comments from the EMRs on international staff salaries:

- "...ICRISAT's salary and benefit package for principal staff is well within accepted norms for international research institutes and compares favorably with those of other IARCs" (ICRISAT 1, p. 32).
- "ILCA's salary-fringe benefit package is a good one and is fully competitive in the international market" (ILCA 1, p. 34).
- "...international staff salaries appear adequate and are, in fact, at or near the top of salary scales at other IARCs" (CIMMYT 1, p. 46).
- "...levels of salaries of international staff appear to be reasonably competitive (a bit on the low side) for the market in which the center operates" (CIP 2, p. 49).

The situation regarding the local staff is somewhat more complex. Although local salary surveys are conducted or commissioned regularly by most of the centers, non-availability or inappropriateness of job descriptions and evaluations make these surveys less useful. Several centers (including ICRISAT, IRRI, CIMMYT and IITA) recently initiated or completed job evaluation and position classification exercises. These will make comparisons with other organizations more meaningful in the future. They will also facilitate comparison of jobs within the center.

Generally, the salary surveys conducted on local staff have shown that the centers compare favorably with the better employers in their community. However, some centers are finding it difficult to attract local staff with particular skills. For

example, CIP was reported to have difficulty in attracting good economists and staff with computer skills (CIP 2, p. 49). IRRI found it difficult to keep good chemists, graphic artists and computer personnel (IRRI 1, p. 47). The CIMMYT EMR noted: "CIMMYT is no longer competitive with the market for some categories of staff, most of whom must be recruited from Mexico City where positions in these categories are in generous supply" (CIMMYT 1, p. 46).

Personnel policies and procedures. The recent CIP EMR described CIP's approach to personnel management as "pre-bureaucratic" because personnel relations "have been conducted on an intensely personal rather than on an impersonal basis" (CIP 2, p. 51). This description applies equally to many of the centers during their initial years. However, as the centers grow in size, it becomes difficult to continue making the decisions on personnel matters subjectively and on a case by case basis. Thus, bureaucratization (or having impersonal, objective rules and regulations) becomes a necessity.

The centers are probably scattered at various points of the spectrum between CIP's "pre-bureaucracy" and a full-scale bureaucracy. Some have well-developed and documented policies and procedures (e.g., CIAT). Others are compiling or have recently codified their policies (e.g., ICARDA and IRRI). Still others find it more useful and their size enables them to operate with minimum bureaucracy (e.g., ISNAR and IFPRI).

Whatever the level of formalization of personnel policies and procedures, it is important that they are enforced objectively and uniformly. The EMRs noted some problems in this area at ICARDA and IRRI, which are now being corrected. It is also important to communicate the policies effectively. Their respective EMRs suggested that CIMMYT and ILRAD spend greater effort in this area, which both centers have begun to do.

The boards have taken interest and are involved in review of the centers' human resource management policies. The ILCA EMR recommended that "a Board subcommittee keep track of key aggregate indicators of the overall effectiveness of the personnel function, using information provided by management" (ILCA 1, p. 50). Although this specific recommendation was not implemented, the ILCA board began paying greater attention to the personnel area. Recently, the IRRI board formed an ad hoc Management Committee, which spent considerable time on the center's personnel issues. The executive committees of most boards now discuss personnel policy questions regularly.

Performance planning and assessment. This is an area flagged as a weakness in practically all the EMRs conducted to date. We will not cite quotations because there is little variation among the statements made by the EMR panels. The most frequent suggestions include the following:

- Performance assessment should be closely tied with performance planning at the individual level;
- Staff should be given an opportunity to describe their accomplishments in terms of previously agreed performance goals;
- Supervisors' assessment should be discussed with the subordinate so that reasons for future personnel action can be made clear;
- Salary increments should be clearly tied with performance; and
- Immediate supervisors of staff should play a key role in performance planning, assessment and salary adjustments.

Each center is in a different stage in terms of developing and using a system similar to the pattern recommended in the EMRs. Improvements in other areas of human resource management will undoubtedly influence the progress made in this area. However, the level of authority of individual managers in personnel management matters will depend on developments in vertical decentralization of decisionmaking (see Section 4.3 on this).

Tenure and career development. Career development options depend on the expected tenure of staff. If the staff are hired on a "continuing appointment" basis (which is tantamount to having tenure in universities), the center needs to do its best to further develop the potential of the staff as he/she is likely to stay with the institution until retirement. If, on the other hand, staff are hired for a short period to accomplish a specific purpose, there would be less need to groom or develop them for the later years of their careers with the center. Career development in this latter instance usually involves assistance in outplacement and efforts to keep the individual's skills sharp (such as through attendance at professional meetings and some short-term training).

The situation in the centers with respect to tenure of international staff varies. ICARDA, for example, "follows a policy of offering continuing employment after a probationary period. The contracts are not time bound" (ICARDA 2, p. 57). At CIAT some members of the senior staff are on fixed-term contracts, but others have continuing employment status. At IITA, "the initial employment of scientists is for three years, with the expectation that a 'continuing appointment' could be offered after a 'successful review' of performance " (IITA 2, p. 36). Most of the other centers use fixed-term contracts that are renewable. The EMRs have recommended having fixed-term contracts

instead of continuing appointment (e.g., at ICARDA and IITA). Among the centers only WARDA has a ceiling (ten years) on the total number of years an internationally recruited staff member can work at the center.

Fixed-term contracts do not necessarily guarantee turnover of staff. For example, IRRI uses one-year contracts with its senior staff, but there are several senior staff who have been at IRRI since its founding three decades ago.

There is no formula on the length of initial contracts that could apply equally to all centers. IITA may need to offer long-term initial contracts in order to attract qualified prospects to Nigeria. The ILRAD EMR recommended using contracts longer than two years in order to attract senior scientists.

Perhaps the more important issue is to have a clear policy on turnover of senior staff. The ICRISAT and IRRI EMRs recommended this. The CIP EMR praised this center's approach to turnover: "CIP has taken an excellent initiative in periodically evaluating senior staff tenure. The group of Directors now identifies and assists with the relocation of senior employees whose retention is no longer in CIP's best interests. The Directors, after evaluating the staff member, have in almost all instances been able to help arrange alternative employment" (CIP 2, p. 47).

What each center needs is a clear policy which will ensure turnover when this is necessary, but allow it to keep first rate staff as long as possible. In practice, this can best be accomplished through a succession of fixed-term renewable contracts and a good system of performance appraisal. As with the tenure of directors, I do not favor instituting system-wide norms on senior-staff tenure. (See also the discussion in Section 7.4 on quality of the scientists.)

Tenure of locally recruited staff is a different matter. In all cases, employment conditions of local staff are governed by local labor laws. For example, ILCA can use term contracts with its local staff. CIP, on the other hand, cannot terminate the employment of its Peruvian staff after they have been on the job three months.

Turning to issues of career development, practically all the EMRs have recommended placing greater emphasis on meeting the training needs of local and international staff. The centers' needs for training in management and supervisory skills were recognized in all the EMRs. We refer the reader to Chapter 7 for a discussion of management skills and teamwork at the centers.

Many of the centers use the training resources within their community to upgrade the skills of their local staff. The IRRI

EMR suggested that this center should consider utilizing the resources in its client-oriented training program for training needs assessment and some in-house training.

Finally, the CIMMYT EMR recognized training as a means of upgrading the skills of outposted staff. It recommended "that CIMMYT introduce mandatory in-service training for international staff prior to assignment in outreach and develop training opportunities for key outreach support staff" (CIMMYT 1, p. 41).

Downsizing. Reduction of staff is not an objective in itself. Like going on a diet, it is only a measure to revitalize and become more fit as an institution. If there is some extra fat, downsizing can help reduce it. But the most desired policy is to stay slim and trim so that downsizing will not become necessary.

Two centers have taken bold measures in this area in recent years. At IRRI, the size of the total staff is being reduced by about 500 employees (20 percent of IRRI's total staff) in response to the new staffing requirements emerging from the recently completed strategic plan and a perception that "going on a diet" will reinvigorate IRRI. At IITA, about 185 staff (13 percent of IITA's total staff) were released, following an intensive study of personnel policies and job requirements.

At both IRRI and IITA having a clear understanding of the jobs required to implement the center's strategic and operational plans was the starting point for reorganization. This was followed by a study of the credentials of the existing staff and a new job grading system. Mismatches between required jobs and the skills of existing staff led to identification of staff movements. At IITA, "some staff had to be released, some downgraded, some had their positions frozen, some trained, some upgraded and some simply awarded their new salaries" (IITA 2, p. 5).

It should be kept in mind that IRRI and IITA are two centers which went through major strategic change in recent years. This led to a major reorganization in both cases. Thus, in both cases downsizing was induced, in large measure, by a major reorganization and intensive analyses of existing personnel systems.

Centers which are not going through major restructuring could also undertake similar analyses of their job requirements in comparison with their existing skill mix. Most large organizations go through this type of an exercise periodically in order to ensure that their potential to perform in the future remains high.

Conclusions on management of human resources. Progress in improving the human resource management function has been uneven among the centers. There is need for greater professionalization of the function in several centers. Also, human resource management should be seen more as a dynamic and forward-looking activity than as a passive, bureaucratic operation.

The centers' compensation policies are appropriate for both their international and local staff. Performance planning and assessment is an area of weakness in most centers. There is also need for improving training and career development opportunities for both international and local staff. Other areas requiring improvement vary by center. Principal among these are recruitment of high quality senior scientists (particularly those in their mid-careers), recruitment of women and formalization and objective enforcement of personnel policies.

On tenure of senior staff, each center needs a clear policy which will ensure turnover when this is necessary, but allow it to keep exceptional staff as long as possible. For this, renewable fixed-term contracts should be a norm in all the centers.

Recent downsizing experiences of IRRI and IITA should be studied by the other centers. There is merit in the centers occasionally studying their job requirements against the skill mix of their staff.

3.2 Financial Management

Effective management of financial resources is important in any organization, but is particularly so in the centers because of the CGIAR's unique funding system which introduces some degree of uncertainty for the centers. The centers need to secure the resources required to implement their strategies in a manner that will not fragment their activities and jeopardize the integrity of their program plans. They also need to efficiently manage the resources they have obtained with strict adherence to generally accepted accounting and financial management norms, both at their headquarters and field offices.

The general message emerging from the EMRs is that in recent years a great majority of the centers have either improved their overall performance in financial management or had been performing well all along. The most striking improvements have taken place at IITA, CIAT and ILCA:

- "In the light of the challenges in financial management faced by IITA management in 1985, progress made in the last five years is impressive" (IITA 2, p. 44).

- "CIAT's financial management during the five year period subject to this review appears to have been more than satisfactory, and a number of truly remarkable improvements have been made in the Center's financial reporting and control systems" (CIAT 2, p. 44).
- "The panel is most impressed with the considerable improvement in the financial management function at ILCA over the last five years and in the financial position and viability of the Centre" (ILCA 1, p. 64).

These three centers had different starting points. The 1983 IITA EMR portrayed a very disappointing picture of financial management at IITA, with no clear accounting policies, poor controls and auditing and few qualified staff. A similar situation had existed at ILCA in 1981, five years prior to the EMR. By contrast, CIAT had a relatively good financial management system in 1984 which was made even better.

The EMRs of most of the other centers have also portrayed a positive picture:

- "ILRAD's financial picture looks good..." (ILRAD 1, p. 31).
- "...financial management at ISNAR is excellent" (ISNAR 1, p. 31).
- "...the systems of accounting and financial control are appropriate to meet the requirements of the center" (CIMMYT 1, p. 58).
- "...CIP is a fiscally sound operation" (CIP 2, p. 53).
- "...accounting, reporting, financial analysis, and internal controls are excellent" (IFPRI 1, p.27).
- "The contributions of the finance/accounting function to the management effectiveness of ICRISAT have been satisfactory" (ICRISAT 1, p. 16).

These overall impressions speak well for the centers and staff concerned. However, despite this positive overall picture, there are several areas that require further improvement, as pointed out by the EMRs. We provide below an overview of the centers' strengths and weaknesses with respect to the following:

- Funding and fund raising;
- Financial planning and budgeting;
- Accounting and financial reporting;

- Liquidity and cash management;
- Financial accountability;
- Organization of the finance function; and
- Financial management at field locations.

Funding and fund raising. The management reviews are generally complimentary of the centers' efforts to expand their donor support base, i.e., to increase the number of donors contributing to the programs of each center. Some major achievements are noted. Over recent five-year periods the number of donors contributing to IRRI jumped from 18 to 29, ILCA's from 22 to 34, and ICARDA's from 29 to 40. Other centers also had a growth in the number of their donors, but not at these high rates.

Having a wider donor support is regarded as desirable by the EMRs because it leads to growth in current or future revenue and could potentially reduce a center's dependency on a few donors. In fact, several of the EMRs recommended that the centers attempt to reduce their dependency on funding from the USAID and the World Bank (the latter contributing as donor of last resort).

The nature of the funds contributed is discussed in virtually all the EMRs. The overriding message to the centers is to minimize restricted funding, particularly if such funding limits the center's flexibility in making changes in its program strategy.

The growth in the centers' funding is a direct result of their success in fund raising. Most centers have systematized their fund raising activities in recent years, some in response to EMR recommendations on the need for clearer strategies for fund raising. The directors are the principal actors in fund raising, although senior staff also play important roles:

- "Responsibility with fund raising lies mainly with the Director General, though the three Deputy Director Generals also have major roles to play" (IITA 2, p. 51).
- "Fund raising responsibilities are specifically assigned to individual staff members and these assignments are made known throughout the center" (CIP 2, p. 53).
- Fund raising efforts are currently combined in most cases with the existing responsibilities of staff. This is partly done with the intention of deploying staff

resources and nationalities to take advantage of fund raising opportunities" (ILCA 1, p. 68).

Several of the centers have now assigned day-to-day donor relations activities to a staff member working in the director's office. The growth in the number of donors requires this, as do the differences in donor reporting requirements. Some board members also play an important role in fund raising, particularly in their home countries. The Fund Raising Committee of the center directors helps establish system-wide strategies on fund raising, which individual centers follow up as necessary through their respective institutions. Some EMRs (eg. ILCA, ICARDA, CIMMYT) call for the development of a board-endorsed fund raising strategy.

Financial planning and budgeting. The EMR panels' comments on budgeting mirror those made in connection with the overall management styles of the directors, summarized in Section 3.3:

- "We strongly recommend that ICARDA...assign a significant degree of budgetary authority to project leaders" (ICARDA 2, p. 24).
- "ICRISAT's management should strive to obtain greater participation in the budget preparation by key staff, especially program leaders, subprogram leaders and other division managers" (ICRISAT 1, p. 18).
- "The approach to budgeting is more top down than bottom up" (CIMMYT 1, p. 57).
- "Budgeting is more a top-down than bottom up process" (IRRI 1, p. 42).
- "Lack of wider participation in the budgeting process may have reduced some staff members' commitment to budget compliance" (CIAT 2, p. 31).
- "Though most sections were requested to develop their own preliminary budgets, many felt that the process was more top down and more a budget allocation than a negotiation" (IITA 2, p. 56).

These comments reflect several facets of management at the centers. First, they show that the directors use the budget process as a management tool, a means of control over activities. Second, they indicate that work planning in units is either not done systematically, or that it is done in a top-down fashion. As budgeting goes hand-in-hand with planning, lack of participation in one usually reflects a similar pattern in the other. Third, they reflect the difficulties faced by the

directors in balancing competing demands for resources, particularly in the face of funding uncertainties.

The EMRs recommended project-based management systems as a partial answer to the call for greater decentralization of budgetary decisionmaking at the centers. As project-based systems are based on a project plan and budget, decisions on projects would necessarily involve negotiation of the plan and budget between the project managers and top management of the center. There are also other reasons for moving toward project management as discussed in Section 4.3.

Accounting and financial reporting. Accounting systems and practices of the centers have improved markedly over the last five years, in part due to a collective effort by the finance officers of centers to prepare an accounting manual. Several centers have modified their accounting systems to accommodate new demands arising from initiation of program- and project-based management systems. There is better documentation of center accounting policies and procedures. Cooperation among the centers is continuing in this area. The CGIAR Secretariat financial staff continue to work closely with the centers on this and other areas of financial management.

Some EMRs were critical of a few differences between the centers' accounting policies and the Generally Accepted Accounting Principles (GAAP). The deviation from the GAAP singled out most frequently is the centers' nonrecognition of depreciation as an expense. The CIP EMR noted: "While the benefits and disadvantages of the practice are debatable, financial reporting is not accurate if depreciation charges are excluded" (CIP 2, p. 61). Similar sentiments were expressed in the IRRI, CIAT and CIMMYT EMRs. This issue is currently under study by the Secretariat and the finance officers from the centers.

Improvements in accounting systems of the centers have generally been coupled with similar improvements in computerization of financial information and reporting systems. Although the centers are in various stages of developing computerized financial information systems, financial reports now serve the needs of center managers better than before. CIAT has made important strides in this area, as noted in Sections 3.3 and 3.4. IITA's system (developed at a cost of US \$1.2 million) "has been operating for one year and management is now able to get some of the information required to manage effectively" (IITA 2, p. 55).

Liquidity and cash management. The centers' liquidity position varies throughout the year because donor funds are not received on an evenly distributed schedule. The EMRs are generally complimentary of the centers' efforts to build and

manage their working capital and the practice of short-term borrowing when necessary.

Most centers are following more opportunistic policies in cash management and investment than in earlier years, in part because of the availability of new options. The following are three illustrative cases:

- Regarding a CIAT proposal to purchase Colombian debt with a face value of US \$50 million at a 40 percent discount, the CIAT EMR panel notes: "The debt swap proposal is an excellent attempt on the part of CIAT to assume a more proactive responsibility for the management of its income. Significant questions concerning the present proposal may make this particular debt swap more difficult to implement than originally envisioned. But similar ideas should continue to be pursued" (CIAT 2, p. 56).
- "By using the Nigerian Autonomous Foreign Exchange Market, IITA was able to reduce its operating costs. This official secondary market enabled IITA to exchange funds at a favorable rate considerably better than the official Central Bank rate. In 1989, participation in the Nigerian Debt Conversion Program generated significant advantages to the center. The reduction in costs is estimated to be about US \$2 million" (IITA 2, p. 52).
- "Since July 1985 ICARDA has been importing Syrian Pounds, purchased on the free market in Lebanon at significantly more favorable rates than officially available in Syria, to pay the monthly payroll of its local staff...Early this year [1988], ICARDA's board decided to halt this so-called 'Lebanese Window' operation...in order to 'regularize' ICARDA's exchange policies" (ICARDA 2, p. 44).

The EMR panels have examined some of these opportunistic schemes and are generally supportive of the centers' efforts. However, they point to the need to have clearly laid out and board-approved investment policies in centers that do not have them. The IITA EMR also calls for a board resolution on the borrowing powers of the Director General.

Cash management is becoming increasingly important for centers operating in hyper-inflationary economies. The CIP EMR noted, for example, that during the first eleven months of 1989 the rate of inflation in Peru was 2,050 percent, as compared with only a 335 percent devaluation of the local currency. As a result, CIP was compelled to adjust the salaries of staff paid in Intis on a monthly basis.

Financial accountability. Recent EMR panels have, in general, been satisfied with the financial audits performed by the centers' external auditors and the centers' compliance with auditors' recommendations. There are no uniform standards for external audit across the System. It may become necessary to introduce greater uniformity in audit practices, particularly if the scope of external audits were expanded to include compliance with operational procedures. At the moment, external auditing at most centers hardly goes beyond certification of financial statements and examination of internal controls.

There has also been some improvement in internal auditing. Many more centers now have internal auditors than five years ago, in part because of recommendations from external auditors and the EMR panels. However, as the CIMMYT EMR recognized, "the objectives and scope of audit work need to be expanded... and the function given higher rank and status within the organization" (CIMMYT 1, pp. 60-61). Dialogue among the centers in the area of internal auditing would help, as many of the centers are faced with similar audit issues.

Improvements in auditing are in no small measure due to greater recognition of the audit function by the boards. Most boards now have a separate audit committee, with members conversant with audit requirements.

Organization of the finance function. As noted in Section 3.3 the recent trend in the centers is towards consolidation of administration and finance under one head. This has helped improve coordination among closely related administrative and financial functions.

In most centers the staffing of the finance function includes only one internationally recruited person. Except for a few centers, the EMRs were generally impressed with the quality of the financial staff of the centers and the internal organization of the finance function.

Financial management at field locations. This is an area of weakness at several of the centers that have field or regional offices. The EMRs of CIP, CIAT, CIMMYT and ICARDA made several suggestions for improving internal controls and internal auditing. The CIP EMR strongly recommended that the regional offices be audited each year (CIP 2, p. 62). The CIMMYT EMR suggested avoiding delays in submission of financial statements and other data from field locations (CIMMYT 1, p. 60). The ICARDA EMR suggested that "outreach programs operate on a revolving imprest account based on a pre-determined initial advance, to be replenished on the basis of actual approved expenditures and upon submission of adequate disbursement vouchers" (ICARDA 2, p. 48).

The EMRs also noted some recent improvements in financial management at field locations. Control at IITA substations "has received increased attention in the last year and a number of controls have been added. ... In addition to the review by Budget and Finance [staff], the Internal Auditor also makes a number of visits to the sub-stations to verify procedures and practices" (IITA 2, p. 55). The ILCA EMR also noted that the "systems and controls over the use of funds by country program offices are effectively and strictly enforced (ILCA 1, p. 79).

As noted in Chapter 6, regional managers located in Africa recently attended a short management training course. Similar courses are planned for regional managers in Asia. Although the scope of the initial courses did not include financial management, future courses are likely to include this subject as most centers expressed such a need.

Conclusions on financial management. Most of the centers have either improved their financial management skills in recent years or had been performing well all along. Management of fund raising activities has improved significantly in all centers. A few have experimented with novel schemes for stretching their donor contributions. Accounting systems have also improved, due largely to inter-center efforts in the finance area. In addition, several centers have improved their financial information systems, and some their internal auditing. Many boards have improved their financial policymaking and oversight functions.

Budgeting remains a centralized activity in many centers. A move towards project-based planning and budgeting systems will require wider participation of program and project managers in budgeting. Financial management at field locations also requires improvement. External and internal auditing is a third area where further improvement is necessary in most centers. Finally, in view of the increasing complexity of the financial and economic environments faced by the centers, there is need to strengthen cash and liquidity management functions. Greater inter-center collaboration in audit systems and practices would be valuable.

3.3 Management of Administrative Services

The range of administrative services managed by a center depends on the specific circumstances of its immediate environment and the requirements of its program operations. Thus, IFPRI, ISNAR and IBPGR operate out of rented space. Their building and site maintenance is handled by contractors. Also, they have no need to maintain a power plant, water supply system, motor pool, medical clinic, stores, experimental fields, dormitories, staff housing, food services, security force, etc.

IITA is at the other extreme. It is compelled to run a self-sufficient "township" (to use the terminology in the recent EMR) with all the services mentioned above. It even has a Community Council with elected representatives. The range of administrative services managed by the other centers is similar to IITA's. Some run schools for the children of staff (ICARDA and IITA). Several operate airplanes to carry out their work more effectively (CIP, CIAT, IITA and ILCA).

Because the topic of administration is so broad and the issues in each service area are so center-specific, this section covers broad themes rather than detailed discussion of individual service areas.

Organization and staffing. The recent trend in the centers is toward consolidation of administration and finance under one head. This had been the case in the smaller centers and at CIMMYT and CIAT. More recently, IITA, ICRISAT, IRRI, ILRAD and ICARDA also combined administration and finance under one manager responsible for this task. CIP and ILCA continue to have the heads of administration and finance report separately to the director (through the deputy director in CIP's case). Management of human resources generally falls under the head of administration or the combined head of administration and finance, except at IITA where it currently reports separately to the director.

Consolidation of administration and finance under one head was aimed at providing more continuous leadership and coordination to these important functions than the directors were able to provide with their heavy travel schedules. During the initial years of their appointment, some directors found themselves spending inordinate amounts of time on administrative and finance matters at the expense of other aspects of their centers' work. The new structures have enabled them to better balance competing demands on their time.

The staff in the administrative units are almost exclusively recruited locally. Most centers have only one internationally recruited staff member devoted to administration (as distinct from finance and personnel). The situation differs across the centers. Most of the centers located in developing countries are blessed with high quality administrative staff who can be recruited from the local community. ICARDA hires staff from the regional labor market. IITA has had to devote more international positions to administration than the other centers.

The organization of administration is hierarchical in most centers. IITA's organization is one of the most fragmented (with twelve managers reporting to the deputy director for management), but the center plans to consolidate and realign some administrative functions. IRRI recently completed such a

realignment. ILRAD introduced a middle management layer a few years ago.

A hierarchical structure fits the administrative side of the centers' organization well. As administrative tasks are more standardized than research tasks, there is greater scope for managing them for efficiency.

Several centers have established user committees to provide feedback on quality and timeliness of administrative services. ISNAR has a staff advisory committee on administration which serves as a check on the appropriateness of administrative procedures. Recently, the boards have begun to play a stronger role in oversight on administrative matters (e.g., IRRI and CIAT).

Promising trends. Except for a few cases, the general message of the EMRs is positive with regard to effectiveness of the centers' administrative operations. Remarkable improvements over a short period were noted in the case of ILCA. The following is a sample of comments from EMRs of the larger centers:

- "The Panel's overall assessment is that the efficiency of administration at ILCA headquarters has improved considerably in recent years, which has enhanced the quality of the services to the organization" (ILCA 1, p. 93).
- "The administration units ... are generally well managed" (ILRAD 1, p. 49).
- "The units comprising ICRISAT Center's administrative services are well managed and run effectively" (ICRISAT 1, p. 23).
- "After extensive consultations with staff throughout CIMMYT who are 'users' of these administrative services, we concluded that they function with commendable effectiveness" (CIMMYT 1, p. 62).
- "CIAT's Executive Officer ... has played a leadership role in creating and maintaining a well-run supporting environment for the center's work" (CIAT 2, p. 65).

Having quality staff, effective managers and appropriate rules and procedures lie at the heart of successful performance in administration. Equally important is the "service philosophy" of administrative units. As a first trend, it should be noted that in most of the centers the directors have been reinforcing the principle that administration exists because of programs and that an effective administration is one that facilitates the production of program outputs. After some conflict between the

programs and the administrative side of the center several years ago, CIAT has successfully installed a service philosophy. CIP's self study also led to clarification of the clients of administrative units and formulation of a clear mission statement emphasizing effective and efficient service to clients (CIP 2, p. 64).

Search for greater efficiency in administrative operations is a second positive trend. IRRI has been streamlining its administrative operations over the last two years which, along with other steps, has led to a sizable reduction of staff. IFPRI has saved at least \$300,000 per year in travel costs alone by frugal travel policies and careful shopping for travel services. CIAT has reduced the cost of its supplies by sending complete pallets of merchandise which meet specific volume and weight parameters and by negotiating wholesale discounts (CIAT 2, p. 67). CIMMYT, ICRISAT and several other centers have been shopping wisely in the purchase of computer equipment and supplies.

The examples given above are only illustrative of a trend in some centers to place greater emphasis on efficiency. As the EMRs are not geared toward assessing the efficiency of each administrative sub-area, it is not possible to reach specific conclusions on the centers' administrative efficiency. (On this point, see Section 7.3.)

Third, installation of computer-based management information systems for managing and controlling many administrative operations is a new trend. CIAT has developed the most advanced of these systems. "Virtually unknown at CIAT a decade ago, computer systems are used not only to run the center's accounting system, but to facilitate all routine management tasks from automobile maintenance to menu planning, and to coordinate the work of the various administrative service units by providing the necessary linkages between warehouse receipts and payment of invoices, or personnel management and payroll administration" (CIAT 2, p. 71). Other centers are not as advanced as CIAT in this area, but computerization is a trend at all centers.

Fourth, inter-center collaboration in administration is a new development. The finance and administration officers from the centers met for the first time in 1989 and the group is continuing its dialogue through a new electronic computer conference mechanism established within CGNET. Inter-center collaboration in the finance area had long been practiced within the System. Its expansion into the administrative areas is a welcome development.

Several years ago ICRISAT and IRRI agreed to have ICRISAT's purchasing manager spend a mini sabbatical at IRRI, in order to have him develop a purchasing manual relevant to the needs of the centers. This resulted in the preparation of a reference document

which was shared with the other centers. Bilateral arrangements of this kind provide incentives to competent administrative staff to expand their knowledge of the CGIAR centers and share their views on administrative matters with others.

Areas requiring continuing attention. There are some recurrent themes in the EMRs which require continuing attention from the centers. These include the following:

- Security of center staff and facilities;
- Maintenance of physical facilities;
- Meeting administrative service needs of field staff; and
- Cost recovery and contracting.

Security of center staff and facilities has become a rising concern of several centers because of the instability of the political environment in which they operate. In recent years, countries like Peru, Colombia, Syria, Nigeria, Liberia, Ethiopia and the Philippines have been among the hot spots for political unrest and potential terrorist activity. This has affected the operations of the centers with headquarters in these countries. Fortunately, loss to life and property has been minimal at the centers. This is because of the prudent measures taken by the management of the centers concerned and the dedicated efforts of the local staff.

Where necessary, the EMR panels have focussed on this area in detail and reviewed the centers' plans for protecting staff and facilities. The panels have chosen to say little in their public reports in this area. Nevertheless, the overwhelming sentiment of the panels is that the centers concerned have taken sufficient precautions to prevent harm to center staff and operations. Security matters are likely to demand continuing attention from the top management and boards of the centers operating in volatile settings.

Maintenance of physical facilities was flagged by the IRRI EMR as an area requiring close attention: "A rising concern of IRRI management is with the costly problem of deferred maintenance of several aging buildings and laboratories" (IRRI 1, pp. 59-60). The issue was pictorially brought to the CGIAR's attention during IRRI's presentation at the International Centers Week in 1989. As IRRI is the oldest of the CGIAR centers, it may be natural for concerns on physical plant maintenance to surface first at this center.

The IRRI case shows that although it may be relatively easy for the centers to acquire funds for buildings, it is more

difficult to obtain resources for their maintenance. It also provides lessons to other centers on the need for timely planning of maintenance. A move towards depreciation accounting could also help.

While administrative services and procedures at the headquarters of several centers require further improvement, administration at field offices is in greater need of strengthening. This was recognized by several EMRs (most notably, ILCA, CIP, CIMMYT, CIAT and ICARDA).

Administrative support in the field offices is not generally of the same quality as at the center's headquarters. Outposted scientists often have little interest or training in administrative matters. Also, administrative procedures appropriate for the headquarters' operation may not be suitable for the field offices. To overcome some of these problems, the CIP EMR recommended greater use of electronic communication to backstop the administrative needs of field staff. The CIMMYT EMR recommended training of outposted staff in financial and administrative matters prior to their departure from CIMMYT. The CIAT EMR recommended development of administrative systems and procedures specifically for outposted staff. The ILCA EMR suggested having a person at headquarters serve as the "desk officer" for administrative staff at field offices.

Finally, several EMRs suggested cost recovery as a means of improving accountability and efficiency of some administrative services. The following quote from the IRRI EMR, which is echoed also in the CIAT EMR, illustrates the point:

"Only a part of the total cost of IRRI's service work is charged back to the user. In this sense, substantial subsidies are involved. In due course, IRRI must decide to what extent service unit costs are to be recovered through the charge-back process. When users pay the full cost of services, they likely will be better shoppers" (IRRI 1, p. 62).

Contracting for administrative services is another alternative for improving efficiency and reducing the size of staff. The smaller centers located in developed countries are doing this extensively because of the availability of quality services in the community. Some of the larger centers also contract out some of their work. "Not all of IRRI's building construction, maintenance, and repair work is done by B&P [Buildings and Property Department]. Many jobs are let out to private contractors through competitive bidding" (IRRI 1, p. 59). At CIMMYT, "the servicing of such major systems as heating and air conditioning are contracted out, and there are also maintenance contracts for computers, duplicating machines, and

the like" (CIMMYT 1, p. 62). In 1988, ICARDA contracted out food and cleaning services.

In some centers contracting is easier said than done. According to the ICRISAT EMR: "in recent years efforts have been made to contract some of PPS's [Physical Plant Services] work outside the center. The current PPS unit managers resist this action and recite a long list of quality and procedural difficulties, the ultimate conclusion being 'we can do it better'" (ICRISAT 1, p. 25). In its response to the EMR, the ICRISAT management indicated that the Institute is experimenting with a greater portion of contracting for physical plant services.

Conclusions on management of administrative services. The range of administrative services managed by the centers varies across the System and there is relatively little comparative data on the management of each type of service. Nevertheless, the available evidence shows that there has been improvement in several areas. Administrative services are better organized than before and many centers have instilled a constructive "service philosophy" in the administrative areas. "More" administration is not necessarily seen as "better." There are several examples of improvement in individual centers in areas such as streamlining of administrative operations and installation of computer-based management systems. Recent increases in inter-center collaboration in administration is a promising trend.

Several areas require continuing attention by the centers. These include timely maintenance of physical facilities, administration at field offices, greater use of cost recovery and charge-back systems and wider exploitation of contracting opportunities.

3.4 Information Management

Within the CGIAR, information is the least understood of the four resources discussed in this section. This is primarily because topics typically covered under the information heading are diverse, ranging from records management to publications. Also, information is both an input and an output of the centers, which sometimes creates confusion in the treatment of the subject in the external reviews.

The EMRs have taken an information science approach to information management. This is illustrated best by the description of the area in the ICARDA EMR, which provides as good a treatment of the subject as in any EMR:

"ICARDA can be thought of as a system that takes in information, transforms it, and produces it in forms that

are most useful to other systems. To be seen as effective, the system should have few influences distorting the flow or meaning of information, and it should have information products of value both inside and outside the center" (p. 68).

Information for external clients. The information activities of the centers are geared toward both internal and external clients. The EMRs have focussed less on information for external clients than internal clients.

The centers' work on information for external clients can be described under four headings:

- Scientific/program publications. These serve a wide variety of clients, ranging from developing country research institutions to the world scientific community at large. Quality and relevance of these publications is outside the scope of this paper. But questions have been raised about some center publications. A recently conducted comprehensive overview of the information function in the centers noted, for example, that comprehensive annual reports and Research Highlights are "neither the most effective, nor the most efficient medium for delivering the results of original research to the appropriate scientific target groups" (Woolston 1990, p. 109).

From a management standpoint, an important issue is cost recovery: Should the centers charge for their publications and communication products? IRRI and IFPRI, for example, are at two extremes. IFPRI distributes its publications free of charge. IRRI charges many of its clients for its publications and uses the proceeds to finance future publications. While no single formula could be applied to all centers, a worsening of the centers' funding environment could necessitate use of information products as a source of revenue. For years CAB International, another international organization in the agricultural research business, has been using the proceeds from its information service activities to fund the bulk of the costs of its research institutes.

- Information for public awareness. This is a growing area of activity in the centers. CIP has recently formed a public awareness unit and other centers have staff devoted to public relations. Center information staff are preparing increasingly sophisticated information products designed specifically for the media and the general public. Inter-center collaboration in this area is strong, as evidenced by

the formation of the CGIAR Public Awareness Association. The cost effectiveness of the activities is not clearly known, except perhaps in the area of dispelling rumors and protecting the centers' interests against attacks in the media. The centers have a good record in this area. It is too early to make judgments on the cost effectiveness of public awareness activities because most of these are geared toward generating results in the long run.

- The centers as conduits for scientific information. This is another growing area of work at the centers. Selective dissemination of information (SDI) services and information networks led by the centers have expanded. IRRI's mandate, for example, instructs the center to establish, maintain and operate "an information center and library which will provide for interested scientists and scholars everywhere a collection of the world's literature on rice" (IRRI 1, p. 66; emphasis added). This is a daunting task with no limits! Another example is ILCA which, at the time of the 1986 EMR was managing eight information networks. While the usefulness of these networks was not questioned, the EMR noted that "for a relatively small institution, ILCA's attempt at running seven or eight networks may exceed the organization's support capacity... The start-up costs required in issuing a few newsletters represents a small part of the eventual organizing and support costs once a network is in full swing" (ILCA 1, p. 90).

Again, we do not question the relevance or the usefulness of these activities where a center packages its own and others' information products for the benefit of its clients. The question is one of tradeoffs. Time devoted to network coordination is often time taken away from research. Resources going into IRRI's unlimited worldwide information services could easily go elsewhere. These tradeoffs cannot be made from the outside. As we note below, through strategic planning, the centers have begun to address the tradeoffs between information and other activities.

- Strengthening information capacities of clients. This information-related function is at its infancy at many centers. As the center mandates were expanded to incorporate the strengthening of national agricultural research capacities in client/partner countries and institutions, the centers identified information access and dissemination as important barriers to performance. At an inter-center meeting held at CIP in 1987 the

center information officers recommended that the centers should:

- Promote setting up national and regional information networks;
- Assist in directing funds for information work of national programs;
- Facilitate exchange of information among countries in a region;
- Train national information professionals; and
- Package their information in forms appropriate for use in national programs (CIP, 1987, pp. 4-5).

Each center is approaching this area differently. We noted above ILCA's emphasis on information networks. This center has taken the lead in an effort to organize an African agricultural information network. CIAT has integrated information services into its outreach program from the beginning and has been an active participant in Latin American regional networks and professional associations. IRRI has provided in-service training opportunities for national information staff and conducted a program to train national program editors and writers.

The centers now see production of information products and services for external clients less as an isolated activity than before. During their strategic planning most centers considered information as a "business" on par with research, training and consultancy. At CIMMYT, for example, one of the six internal strategic planning task forces focussed on the information function, with inputs from information scientists from the private sector and multilateral agencies. This is a healthy development as it helps clear the confusions about the function itself and provides a forum for addressing the kinds of tradeoffs noted above.

Information technology and systems. The treatment of information management in the EMRs covers mostly the centers' facilities and systems for acquiring or generating information and transforming it for use by internal and external clients. The following topics are explored in varying detail:

- Library and documentation facilities and services;
- Computer facilities and services;

- Electronic communication;
- Records management; and
- Management information systems.

The centers mostly run traditional library services in an old-fashioned way. Many serve not just the staff of the center, but also the immediate community. At IRRI, for example, a great majority of the users are students and faculty at the neighboring university. The same is true at IITA where the "library facilities have been overwhelmed by graduate students and trainees on the campus in recent years" (IITA 2, p. 69). EMR panel interviews have shown that center staff are generally satisfied with the service provided. User committees help ensure that staff concerns and needs are reflected in the policies of the libraries. Close interaction with other centers and more advanced libraries like the British Library and the National Agricultural Library in the U.S. helps center librarians obtain the materials center staff need.

Rising costs of publications is a major concern. In the last decade, annual increases in subscription price have often been double or triple the rate of inflation, with the additional requirement to pay "library rates" that are double the individual subscription price. Also, the services obtained from many developed country institutions are no longer free, as these institutions face strict cost recovery requirements. This new cost environment calls for careful assessment of library operations in most centers. Woolston (1990) makes several useful suggestions for improving the efficiency of library services.

The area of documentation is perhaps equally important for the research staff. Many centers have crop-specific "specialized information centers" (SICs) that were originally funded by IDRC or patterned on those funded by IDRC. SICs enable a center to link its information collection and dissemination activities with specific aspects of its mandate and to build a comparative advantage in a few areas. Given the rising costs of obtaining and maintaining information, the centers may need to examine carefully the tradeoffs between library and documentation services.

The situation regarding computer facilities and services is somewhat similar to library services, although significant changes have taken place in some centers. As most of the CGIAR centers are relatively isolated from the main sources of computer technology, many have been slow in reacting to the rapid technological changes. But they have reacted, sometimes collectively. The computer managers from the centers were among the first to hold an inter-center meeting (in Ottawa in 1985). Several centers have joined forces in purchasing mainframes (such

as the Digital VAX installations at CIMMYT, ICRISAT, ICARDA and IITA) and complex software. Many centers use the services of CGNET Services, Inc. in Palo Alto, California for purchasing computer hardware and software. This introduces some degree of, albeit indirect, coordination among the centers.

The advent of personal computers has introduced the same difficulties for the centers as faced by other organizations. Central computer operations have begun to be decentralized, creating problems in data generation, management and sharing. Piecemeal acquisition has led to fractionalization, and subsequent problems in integration (IRRI 1, p. 64). The centers are solving some of these problems with outside help. In one laudable case, CIMMYT's computer manager assisted IRRI in the design of its center-wide computer network.

In the area of electronic communication the CGIAR was the first among public international organizations to build an electronic mail network called CGNET (Lindsey, et. al., forthcoming). Started in 1984, this network now links most members of the CGIAR community. Equally important, it enables centers to communicate with their regional offices and outposted staff in a quick and low-cost manner. ICARDA and IITA are the only centers outside the network. The IITA EMR noted that the center is considering installing a satellite dish, which will enable IITA to join CGNET. In the case of ICARDA, no immediate solution appears in sight as the problem is political, not technological.

Cost savings attributable to use of electronic mail are significant as it has replaced or reduced the cost of more expensive telex and telephone communications. New uses, such as electronic conferencing recently started among the finance and administration officers, are likely to lead to greater efficiency in information generation and may reduce the cost of meetings.

Records management and archives have been accorded low priority by most of the centers. The EMRs, like a broken record, have made repeated observations on the need for improving the centers' archival and records management systems. Among the centers, only CIP had a comprehensive study done by an outside consultant in 1986. The CIP EMR noted that "the new systems appear to have improved efficiency and the users find it flexible to meet changing needs" (CIP 2, p. 73). Even in this case, the archives are not yet in place, in part because appropriate space could not be allocated until very recently.

Management information systems at the centers have improved gradually but slowly, usually in parallel with changes in accounting and reporting systems and computerization of administrative and financial operations. The system at CIAT is

perhaps the most advanced. The recent CIAT EMR described it as follows:

"At the time of this report, a completely integrated management information system (MIS) was available to all administrative and major research departments, and included the following functions: personnel and payroll (both domestic and international), accounting (including general ledger, treasury, budgeting, accounts receivable, and accounts payable), purchasing and inventory control, fixed asset control, motor pool control, communications, bibliographic acquisitions, menu planning and costing, work order planning and transfer pricing, Carimagua inventory control (including cattle inventory), and Miami purchasing and inventory control" (CIAT 2, p. 58).

Systems such as CIAT's bring decisionmaking information to the fingertips of the managers and enable them to monitor important aspects of program implementation on a regular basis. CIAT does not operate a project-based management system. The other centers that do will need to incorporate project-level information into a system like CIAT's.

In addition to information systems for center managers, the EMRs also emphasized the need to meet the information needs of the boards. For example, the CIP EMR noted: "Given that the board members are all busy people and, under the current governance model used in the CGIAR, spend only a little portion of their time on center business, the information that is provided to them needs to be concise, to the point, and, at the same time, comprehensive. We are of the impression that the information that goes to the board is not of this nature" (CIP 2, p. 71). Thus, the EMR recommended improvement of CIP's existing "governance information system" (as distinct from a "management information system"). CIP has already begun designing a new system.

Other issues. Three other system-wide issues on information management require short comment. These relate to the following:

- Technology watch function;
- Organization of the information function within the centers; and
- Coordination on information matters across centers.

As information technology is changing rapidly, the centers need to follow developments closely. During recent years the CGIAR Secretariat has performed this watch function for the centers. The CGNET, the CD-ROM project and computer translation are all activities the Secretariat played a leading role in. Whether it is the Secretariat, some other component of the System

or an outside entity, some specialist group close to emerging trends in technology should continue to perform this function in the future.

The organization of the information function at most of the centers is fragmented. Rapid changes in information technology have brought together the traditionally separate functions like library, documentation, computer services and publications. Thus, technology itself has begun to serve an integration function. Recently CIP and IRRI took this approach during their respective center-wide reorganizations. Other centers should also consider the options for greater integration of information management functions.

Recent developments in inter-center collaboration in the information area are a welcome trend. But there is scope for greater coordination of efforts across the centers. Lack of standards in many areas is leading to inefficiency; joint action can generate more efficient avenues. Examples include: common software for user interfaces to center data bases; standards for electronic publishing; standards for bibliographic data bases; standards for germplasm data bases; inter-library loan agreements and practices; common service standards for outposted staff; system-wide collection policies for library materials; bulk pricing arrangements for computer hardware and software; jointly established archives; combined marketing of center information products; etc.

Conclusions on information management. This area has received significant attention by the centers in recent years and notable progress has been made in a number of areas. The role of information services within the context of the centers' programs has been studied carefully in most centers in connection with their strategic planning. There is greater collaboration among centers through the recently formed information subcommittee of the center directors. Collectively and individually, the centers are placing greater emphasis on public awareness. Computer services have improved in practically all the centers. Most center senior staff have their own personal computers. CGNET, the CGIAR's electronic messaging system, has improved collaboration among and within centers and led to considerable savings in communication costs.

Despite these notable achievements, there are many areas that require close attention. The information function is highly fragmented in many centers. Several centers need to clarify the role they wish to play in strengthening information management capacities in national programs. Library and documentation operations in many centers require careful study in order to explore streamlining opportunities and assessing the tradeoffs between the two types of operations. Improvement of archives and records management should be assigned greater priority.

Management (and governance) information systems need further development and improvement in many centers. Also, there is considerable scope for coordination of efforts across the centers in areas such as standards for electronic publishing, bulk pricing arrangements for computer hardware and software, common software for user interfaces to center data bases, and so on.

4. MANAGEMENT OF TASKS

This section is concerned with how centers translate their strategies into day-to-day action. Four aspects of this process are important:

- Operational plans help identify the tasks that should be performed by units and individuals,
- Organizational structure shows how the planned tasks are allocated to staff and coordination is ensured among them,
- Work processes illustrate the systems and techniques used for carrying out the tasks, and
- Control systems (or review processes) provide information on how well the intended objectives are achieved.

I focus here on three of these factors. Appropriateness of the centers' science-related work processes is not discussed as this area falls outside the scope of the EMRs. Work processes concerning management of resources were covered in the preceding chapter. Operational planning and program review processes are discussed back-to-back because of the overlaps between them.

4.1 Operational Planning

Medium-term planning is a relatively new practice within the CGIAR. All centers have now prepared their first five-year program plans (with their associated budgets) and these have been endorsed by TAC and the CGIAR. Most of these plans, rightly, take the center's long-term strategy as their starting point and describe the programs, activities and projects the center intends to carry out over the medium term. There is little comparative data on the processes the centers have used in developing these plans. Medium-term planning and the resulting system-wide resource allocation processes are currently under review within the CGIAR.

Annual program planning used to be the principal operational planning device in the centers until the start of the medium-term process. The centers' annual planning continues to have two major components: internal program reviews and the annual budget processes.

Annual internal reviews conducted by the centers take several forms. Some centers review the totality of their programs in sessions attended by all senior staff (e.g., ISNAR, CIP, IFPRI, ILRAD, ILCA, WARDA). ISNAR's annual review includes both programs and management issues and is attended by all senior

staff. At CIMMYT and ICARDA, the individual commodity programs hold separate internal reviews. IRRI covers half of its program each year. CIAT's annual review, which immediately follows the internal review, covers one program in depth, with shorter presentations on the other programs. IITA has begun reviewing each of its programs separately and at different times.

The program committee of each board (the whole board in some centers) attends the internal program reviews and these serve as a major source of information for the board on program matters. Some centers supplement internal reviews with reviews of programs or departments conducted by peers (e.g., IFPRI and IRRI). CIP conducts frequent international planning conferences on selected program themes. Some centers hold periodic conferences for consultation with representatives of national programs such as ISNAR's Users' Conferences on major topics, ILCA's biennial meetings with leaders of African livestock research and development and CIP's recently started regional planning conferences. Network meetings also serve as a forum for joint planning.

In commenting on the internal program reviews, some of the EMRs got the impression that these focus excessively on the past, have a "show and tell" character, are not sufficiently critical and do not address questions on outputs and impact. There are exceptions, and the comments made several years ago may not be valid today. The processes now used by ISNAR, ILCA and IITA, for example, represent considerable improvement over the practices of several years ago.

The annual budget processes are the second key aspect of operational planning at the centers. Most of the EMRs characterized the budget processes of the centers as "top-down," with little participation from program managers (see Section 3.2). This is illustrated by the following comment from the CIAT EMR panel: "...lack of wider participation in the budgeting process... may have contributed to the creation of a climate in which program and section leaders sometimes feel frustrated by their difficulty in influencing or, in some cases, even understanding the decision-making process" (CIAT 2, p. 31).

Operational planning at the level of activity/project and individual staff member also require comment. Despite the strong emphasis in the EMR recommendations and the centers' intentions toward installing project-based management systems (see Section 4.3), most centers have not yet developed fully operational project planning systems although IRRI, CIP and several others are in the process of doing so. Performance planning at the individual scientist level is also weak in several centers.

ILCA's planning system is perhaps the most comprehensive in the System. Developed over several years, ILCA's project

protocol system clearly links each project and sub-project, successively, to: operational goals of each thrust or theme, goal of each thrust, ILCA's operational goals, the mission of ILCA and the CGIAR goal. Each sub-project is clearly identified with cost-centers, thrusts and themes. Outputs, objectives, justification, staffing, work program, schedule and costs of each sub-project are also defined. The protocol proposals are discussed at the annual internal program review in connection with each thrust's program and are cleared by the board.

Several of the EMRs have suggested that the center should critically review its internal planning and review systems (e.g., IRRI 1, ICARDA 2, CIMMYT 1, CIAT 2 and CIP 2). This is more important now than before because the newly started strategic and medium-term planning systems may require complementary changes in the annual program and individual-level planning and review processes.

Cost effectiveness of planning should be assessed in the same manner as are other center operations. Excessive planning could be a constraint to performance, particularly in managing activities geared toward innovation (see Section 7.4). Because little is known across the System on the centers' approaches to planning and review, a study of these processes could be conducted (as recommended in the 1988 TAC-CGIAR Secretariat paper on review processes) after the centers have had an opportunity to adjust their current practices.

4.2 Program Review Processes

The comments made above on operational planning generally apply also to the centers' program review processes. Planning and review represent two sides of the same coin. Plans with clearly specified goals and objectives facilitate evaluation. Results of reviews are a primary information source for future planning. Thus, several EMRs have encouraged closer integration of planning and review systems. According to the 1989 CIP EMR:

"Having one forum serve both planning and review purposes provides one form of integration. What is also needed is a system of vertical integration of planning and review procedures. At the highest level, an integrated review system should provide evidence on the center's overall impact and judgments on the appropriateness of its current strategy. The next level should focus on outputs and impact of the two commodity programs as well as the training and information programs. Successive layers should address achievements at the sub-program (thrust), project, and individual senior staff levels" (CIP 2, p. 36).

The message from this and several other recent EMRs is that program reviews should be seen as a means of tracking strategy implementation. Most centers see impact assessment as an occasional activity; none has an organizational unit with a continuing mandate in this area. The recent CIP external reviews are the first calling for a clear organizational focus to the coordination of planning and impact assessment activities.

The need for more peer reviews is another common theme running through the EMRs and EPRs. This will become more important as the centers conduct more specialized, upstream research. We noted above that several centers have begun to put more emphasis on peer reviews.

Finally, as noted in Section 3.1, the centers' systems for assessing individual staff members' performances are beginning to become oriented more toward accomplishment of concrete work objectives. When implemented more widely, this will facilitate the tracking of strategy implementation to the level of individual staff.

4.3 Organizational Structure¹

The experience of the centers shows that there is no one best way to organize international agricultural research. Organizational structure is a means to an end (organizational performance) and a response to the unique circumstances of the institution (its mission, strategy, size, staff, environment, etc.).

Although there is no single organizational model that can serve all the centers well, theoretically there is an optimal model for each center. A perusal of the EMRs shows the panels' search for the optimal model for each center, often second guessing the center management about what form is the most appropriate. The EMR recommendations on organizational structure reflect perceived center weaknesses in coordination, decisionmaking authority, efficiency or accountability.

The following aspects of the centers' organizational structure are discussed below.

- Patterns of differentiation in research,
- Patterns of integration in research,
- Decentralization,

¹ This section is based in part on an earlier paper on this subject (Ozgediz, 1986).

- Coordination of international cooperation,
- Structure of top management, and
- Strategy-structure linkages.

Patterns of differentiation in research. Differentiation essentially refers to how an organization groups the tasks called for by the strategy into institutional units. This is not an easy task as several factors are involved. Highly interdependent tasks need to be grouped together in order to minimize coordination and communication costs among staff who will carry them out. Staff with certain specialties may need to be grouped together in order to maintain a critical mass in vital areas. Units need to be of a minimum size to justify their existence in terms of costs.

The centers fall into two broad groups in terms of their research organization: those which have differentiated tasks mainly in terms of programs and those which have followed a discipline-based structure. CIAT, ICARDA, IITA, CIMMYT and ICRISAT fall into the first group; CIP, ILCA, ILRAD, IRRI and IFPRI into the latter. ISNAR is a special case as the whole senior staff is in one pool, but there is a loose grouping of staff in terms of program areas.

Centers with organizational units along program lines show little variation among them. The purest case is at CIAT, where a strict commodity-based criterion is used for grouping tasks into units. At CIMMYT, the two commodity programs exist alongside a disciplinary department (economics). ICRISAT, ICARDA and IITA, which are all centers with regional and agro-ecological mandates, have complemented commodity-based departments with one emphasizing crop and resource management.

Centers with a discipline-based structure also show little variation. CIP, ILRAD and IRRI represent purest cases of differentiation along disciplinary lines. Their structures resemble that of a university or college. CIP has six departments, ILRAD six laboratories and IRRI seven divisions. Differentiation at ILCA and IFPRI is somewhat more complex. ILCA has three broad disciplinary units (animal science, plant science and livestock economics). IFPRI has five sub-disciplinary departments (on trade, consumption and nutrition, production, growth and data evaluation).

It is interesting to note that the first group represents essentially the multi-commodity centers. For them differentiation of tasks and staff along commodity lines is important. The second group, on the other hand, represents the single commodity or discipline centers in the System. (CIP used to be a single commodity center and a great majority of its current work is on that commodity.) This latter group places emphasis on having

discipline-based departments as the permanent structure, upon which different projects and programs can be superimposed over time.

Integration of research activities. What is described above shows how the centers have differentiated their tasks vertically. Horizontal integration of tasks across the departments is also important. The mechanisms used in the centers for this purpose include mainly the following:

- Liaison persons. When interactions among two units require focal points for coordination, each unit appoints one of its staff members as a liaison person, or the two units agree on one person to play this role. This is practiced widely in the System, particularly in linkages with other organizations, such as liaison scientists from one center posted in another center.
- Task forces, working groups, committees. These are often used when there is need for lateral coordination among several units which cannot be handled through a liaison person arrangement. Each center makes liberal use of this mechanism. ISNAR coordinates work in different subject matters through working groups. CIMMYT plans to establish two cross-department working groups (on crop production and crop protection). The IITA external reviews recommended the conversion of the existing commodity-based working groups into zonal working groups (on humid forest, savannah and inland valleys) to integrate the work of the commodity programs and the crop and resource management work at the level of major agro-ecologies in the region. This latter arrangement will strengthen IITA's regional/agro-ecological orientation permitting interactions from a full farming systems perspective across all resource and commodity programs.
- Integrating managers. When horizontal coordination in a given area demands a focal point with greater authority than a liaison person, the centers often appoint an integrating manager (or coordinator). Integrating managers often have no supervisory authority over the staff whose work they coordinate. However, they often have authority or a strong voice in budgetary matters, planning, approval or decisionmaking. ISNAR's two deputy directors function as integrating managers. At IFPRI, the thrusts are managed across departments by thrust coordinators.
- Matrix organization. This is a complex integration device. In its pure form it involves a dual authority and reporting structure. One of the authority

structures is often along disciplinary or functional lines and the other in program or project terms. Each research worker has two supervisors: his/her departmental manager and his/her program or project manager. Budgetary authority can lie with either manager.

A matrix-type organization works best for the centers organized along disciplinary lines because their research programs cut across several disciplines. The purest form of matrix organization is now seen at IRRI, where the five IRRI research programs (organized along agro-ecological lines) are superimposed over the disciplinary divisions. At CIP, interdisciplinary work has long been organized along the lines of research thrusts. ILCA's approach resembles those of IRRI and CIP; the six research program thrusts cut across the disciplinary departments. At ILRAD, inter-laboratory work on the two diseases is grouped under six projects.

Research projects have become the basic (and smallest) organizational unit of research in practically all the centers. In the centers using a matrix structure, projects serve as the main device for integrating work along the two dimensions. Other centers also use projects as a way of further differentiating tasks within commodity or functional departments. The EMRs have encouraged the centers to move toward project management because it pinpoints responsibility and accountability and facilitates goal-oriented program management.

The number of projects managed by a center at a given moment, viewed in relation to the size of the center, can be a rough indicator of how tightly structured the research program is. At the low end of the spectrum among the centers is ILRAD, with only six projects (three in each disease program). At the other extreme are the large crop centers. For example, according to the 1984 ICRISAT EMR during 1983-84 ICRISAT had 224 ongoing research projects at headquarters and 118 projects in collaborative programs in Africa. In order to avoid excessive fragmentation of their work, most centers attempt to limit the number of research projects to about 60.

When it comes to organizing and managing the institution for innovation, particularly in upstream research, perhaps ILRAD has something to offer to the rest of the System. While breaking work into small pieces may be entirely appropriate for research and research-related activities with little innovative content, excessive fragmentation is inappropriate for activities which aim at innovation. (See Section 7.4 for further discussion of this topic.)

Decentralization and decisionmaking. Three forms of decentralization are relevant for studying management at the centers:

- Geographic decentralization. This has two meanings. In one sense it refers to geographic deconcentration, i.e., forming of spatial units or stations outside of the headquarters, including the outposting of staff. It also refers to delegation of authority to staff located in those units.
- Horizontal decentralization. This refers to the degree decision processes are influenced by persons in staff positions, including those responsible for lateral coordination described above.
- Vertical decentralization. This refers to the degree of delegation of authority down the line hierarchy in a center.

There is strong evidence of increasing geographic decentralization in the centers. CIP now has eight regional offices around the globe. ILCA has four zonal research sites. ICRISAT has a major sub-center in Niger and large units in Zimbabwe and Mali. IITA is expanding the number of its research stations. More of IBPGR's senior staff are located outside than at its headquarters in Rome. CIMMYT has close to half its senior staff at locations around the globe. CIAT has expanded the number of its staff posted outside Cali, particularly in connection with its work on beans in Africa. ICARDA manages several projects and cooperative activities outside its headquarters in Tel Hadya. IFPRI recently posted some of its staff outside Washington and opened a small European office at ISNAR's facilities in the Hague.

These centers have decentralized their operations for different reasons. In many cases, special project funding is the main driving force behind the decentralization. In some centers, decentralization also serves political purposes. In IITA, for example, decentralization enabled the Institute to visibly increase its commitment to Francophone countries. In others, the requirements of the research programs dictate greater decentralization. Whatever the reasons, decentralization has brought center staff closer to clients and collaborators. This has been a factor contributing to the responsiveness of the centers to the needs of their clients.

Delegation of authority to decentralized units or staff varies across the centers. In all centers, there is some degree of de facto delegation, as it is difficult to monitor and control these units from headquarters on a day-to-day basis. However, most centers require approval from headquarters on major

decisions. Center managers at the headquarters responsible for the regional units or outposted staff travel extensively to supervise the decentralized work in what might be called a "management by wandering around" fashion.

There is also some evidence of horizontal decentralization at the centers. Most of the centers are increasingly using advisory committees in decisionmaking processes. Recent self studies at CIP and IFPRI were conducted by committees of staff. Strategic planning at most centers has been conducted through similar committees. ISNAR and other centers rely heavily on staff advisory committees for center-wide issues. However, as their names imply, these committees are advisory to the director. They influence decisions, but do not make them for the director.

Organization charts tell nothing about the degree of vertical decentralization in the centers. In Section 2.3 on leadership we pointed out that, with few exceptions, decisionmaking authority in the centers is concentrated in the hands of the directors. The EMRs, almost without exception, have recommended greater decentralization of authority down the line. Their recommendations on project-based management systems are geared, in part, toward ensuring greater delegation of authority to those managing projects. For example, the IRRI EMR notes:

"In any organization, the most effective management and motivation is achieved by delegating planning and control to the same level. This puts accountability in the same hands as cost generation. In our view, project plans would be initiated by the scientists responsible for the project's management; those who will monitor the generation of costs for personnel, services, supplies, training, travel, equipment, etc. Individual scientists can give play to their creative thinking in an entrepreneurial way to explore frontiers or solve nagging problems. Even wild goose chases may be encouraged in plateaued areas" (IRRI 1, p. 40).

Delegation of decisionmaking authority needs to be studied on a case-by-case basis. Some parts of a center's work should be managed for efficiency. Centralized decisionmaking can be very effective in such areas. Some aspects of research, on the other hand, should be managed for innovation. In such cases centralized decisionmaking, like fragmented structures noted above, is likely to be counterproductive.

Vertical decentralization also has some costs. Staff who are delegated decisionmaking authority have to play managerial roles. As most of the centers' senior scientific staff have not had prior management training and experience, the centers will need to pay greater attention to staff development to improve the managerial skills of the senior staff. (See also Chapter 6 on this point.) They will also need to pay greater attention to the

prior management experience of senior staff recruited to the center.

It should be emphasized that the focus of vertical decentralization is on management, not administration. However, management invariably involves some decisionmaking on administrative matters such as budgeting, purchasing and personnel, and the day-to-day handling of these should be left to administrative support staff assigned to the units and should not be performed by the senior staff themselves.

Finally, in some cases delegation of authority from the director may lead to the lessening of the autonomy of individual scientists. To the extent the managers who are delegated authority begin managing staff reporting to them too tightly, the real purpose of decentralization gets lost. The scientists end up with less freedom than they had before. For this reason, it is important that the centers study the full implications of vertical decentralization before arriving at a pattern that satisfies their needs.

Coordination of international cooperation. The centers have been experimenting with different ways of coordinating their international cooperation activities and the work of their decentralized staff. Two broad patterns are visible:

- Several centers coordinate international cooperation through a separate line department. This includes mainly the centers with several regional offices (CIP, IITA, ILCA, ICARDA and IBPGR). It also includes IRRI where international support programs are organizationally separated from research.
- In the other centers international cooperation is coordinated through existing program departments (CIMMYT and IFPRI) or through designated senior managers (CIAT, ISNAR and ILRAD).

ICRISAT falls in both groups as it has two line departments responsible for work in West and Southern Africa and program departments responsible for international cooperation elsewhere.

The key structural issue facing the centers in the first group is how to link the activities of research and international cooperation departments. Staff in the field feel that their primary accountability is to the manager of international cooperation at headquarters. This manager carries the primary responsibility for coordinating activities with the research units through the director of research. The top management committee of the center and the director often get heavily involved in such coordination. ICARDA recently reduced the

coordination burden on the director by placing the manager for international cooperation under the deputy director for research.

The centers in the second group also face some coordination difficulties. Although this arrangement reinforces the unity of research done at the headquarters and the field, it increases the management load of the program managers. CIMMYT's commodity program directors and their deputies, for example, spend a considerable portion of their time each year coordinating the work of their outposted staff. In addition, the centers in this group face the task of coordinating field work across program departments. At CIAT, one of the main responsibilities of the two deputy directors general is to do just that.

To the extent that the work done in the field is an integral part of the research program of the center, it is more efficient to manage such activities through the center's research management structure. If, however, international cooperation involves little research, it is better to separate it from the research management structure. As the situation in most centers falls in between these two extremes, there are no clear structural choices.

Structure of top management. In the 1950s and 1960s, the management literature placed considerable importance on the span of control of (or the number of persons supervised by) line managers. Although opinions varied, optimum span of control was believed to be somewhere between six and ten. This concept has lost some of its importance nowadays as it is recognized that the number of persons a manager can supervise effectively depends on his/her style and the supervision needs of his/her subordinates.

The size of the top management teams varies across the centers. The smallest team is at ILRAD and consists of the director general and the directors of research and administration. In most of the larger centers the top management team includes eight to ten managers. The span of control of the directors corresponds roughly with these figures.

In addition to the top management team which meets as frequently as several times per week, there are other management teams and committees at each center. CIAT's structure, for example, includes the following groups, successively larger in size:

- Management Team -- The director, his two deputies and the director of finance and administration. Meets frequently but irregularly.

- Administrative Policy Committee -- All members of the Management Team, plus the executive officer and two elected senior staff representatives. Meets every two or three months.
- Leadership Group -- All members of the Management Team except the director, plus all program leaders. Meets every three or four months.
- Monthly Staff Meetings -- One month with the senior staff, the second month with the senior staff plus other international staff and the top tier of the locally recruited administrative staff.

The EMRs have not recommended major changes in the composition of the centers' top management teams. The CIAT EMR is an exception; it recommended the inclusion of the program leaders in the Management Team. However, several of the EMRs have found the functioning of the top management teams too informal and have recommended adoption of more formal procedures such as agenda setting and recording and circulation of minutes (e.g., CIMMYT 1, CIP 2, IFPRI 1).

All centers have a clearly identified person who is in charge of the center in the absence of the director. During recent years CIAT, ICRISAT, IBPGR and ISNAR were managed effectively by second-tier managers when the directors were on sabbatical leaves or the director position was vacant.

Strategy-structure linkages. That structure (form) follows strategy (function) is illustrated by the recent experiences of the CGIAR centers. During the past few years ILCA, IITA and IRRI have made major changes in their strategy. They are also the centers which made the most radical changes in organizational structure. Other centers have also modified their structures somewhat. But, these have been relatively minor changes in response to minor changes in strategy.

It is not surprising that in all three centers mentioned, the changes in strategy and structure followed the appointment of a new director from outside the center. Often, a new director comes to a center either with a new vision or develops a new vision after getting to know the center better. This, coupled with the considerable authority of the directors, facilitates large-scale strategic change.

Although structure follows strategy, in accordance with conventional wisdom (Chandler 1962), the reverse is also true to some extent. The existing structure of power and decisionmaking, whether formally depicted in the organogram or not, acts as a barrier to major strategic change because such change is likely to disrupt the prevailing balances of power in a center. As the

perceived probability of major changes in one's job increases, however remote that might actually be, so does the employee's resistance to strategic change.

We have no evidence that current structures have indeed prevented some of the centers from introducing major strategic change. Nor do we wish to imply that large-scale change is necessary. However, the bottom-up nature of most of the strategic planning processes used by the centers, coupled with the fact that many of these were led by a continuing director whose vision could not change suddenly and drastically, suggest that structure may have played some role during the recent round of strategy formulation in many of the centers.

Conclusions on organizational structure. There is no one best way to organize international agricultural research. Each center has found a structural pattern that meets its own unique circumstances, although there are some similarities across groups of centers. In general, multi-commodity centers are organized along commodity program lines and single commodity/discipline centers along disciplines or sub-disciplines. Matrix management is becoming a common integration device in the latter group, though the centers have yet to solve the complexities involved in operating in a matrix mode. Practically all the centers have moved or are moving toward project-based management systems.

Geographic decentralization is a strong recent trend among the centers. However, there is little evidence of vertical decentralization. In most centers decisionmaking remains highly centralized. While this may be appropriate for some activities that need to be managed for efficiency, tasks with high innovation content require a more decentralized structure.

Major changes in strategy have led to major changes in organizational structure in several centers. There is some speculative evidence that the reverse (i.e., existing structures limiting the degree of strategic change) is also true, though to a lesser extent.

5. MANAGEMENT OF RELATIONS WITH EXTERNAL STAKEHOLDERS

Institutionally, the centers were conceived as semi-open systems. Although there was a desire to create "islands of excellence" shielded from their environment so that research work could be carried out in uninterrupted fashion, there was also a recognition that islands required bridges connecting them to parts of the outside world. Thus, the initial institutes were located near prominent national agricultural colleges or universities in order to foster development of mutually beneficial relationships. Bridges with advanced research institutions in developed countries were formed to keep the centers abreast of new developments in science. The boards and the parent foundations played a bridging role vis-a-vis the donors. Scientists established bilateral relations with national agricultural research programs as required by the nature of the research they were conducting.

Over time, the centers became more open institutions. Growth of special projects required the formation of new bridges with donors and collaborating institutions in developing countries. Expansion of the center mandates in the direction of research service activities (training, information, strengthening of national programs, etc.) required the forming and strengthening of links with clients and partners. The boards began to play a governance role, necessitating the establishment of new modes of relations with donors. Establishment of the CGIAR led to the emergence of new stakeholders (e.g., TAC and the CGIAR Secretariat) with new concerns. As a result, the commodity centers (with the possible exception of ILRAD) could no longer maintain their semi-open system character. They turned from islands of excellence into centers of excellence operating in an open system mode.

This transformation meant that each center had to be concerned with managing its relations with many more stakeholders.¹ Stakeholders needed to be clearly identified and their views understood and considered in the formulation of the center's strategy. Bridges had to be maintained to nurture healthy relations with each. Specific stakeholder strategies had to be formulated towards some key actors.

In this section I discuss the centers' performance in managing their relationships with four key stakeholder groups:

¹

The term stakeholder is used in the sense of Freeman (1984): any group or individual who can affect, or is affected by, the achievement of a center's purpose. The discussion in this section focuses on a center's external stakeholders. Other sections in the paper address relations with employees and the board, who are also important stakeholder groups.

the host country, clients/partners, other research institutions and the donors and the CGIAR. These cover a major portion of each center's stakeholder map. The quality of the "fit" between the center and its environment (as well as the center's adaptability and responsiveness, discussed in Section 7.1) depend to a large extent on the nature of its relations with these stakeholders.

I have not identified universities in developing countries as a separate stakeholder group. Agricultural colleges and universities are generally regarded a part of a country's national agricultural research system and, as such, are included among the centers' clients/collaborators. There is less information in the external reviews on the centers' relations with developing country universities than on their linkages with national programs responsible for research on specific commodities or activities.

I also have not singled out private sector institutions as a major stakeholder group because at the moment they do not figure as prominently in the centers' relations as the four groups mentioned above. The situation in the future, however, is likely to be quite different. As some centers shift the focus of their research from applied and adaptive towards strategic research, they will need to be in closer contact with advanced research institutions in the private sector. Also, some private sector institutions in developing countries could figure more prominently in the centers' work as direct or indirect clients of the centers.

Expansion of the linkages with private sector institutions would bring a new and welcome "business" dimension to how the centers manage their relationships with their stakeholders. Also, such an expansion will bring to the fore issues such as patents and intellectual property rights.

5.1 Relations with the Host Countries

Generally speaking, all thirteen centers in the CGIAR maintain good relationships with the host countries of their headquarters location. Most of the EMRs have complimented the centers for nurturing good relations with the governments of the host countries, including their universities and agricultural research institutions. These relationships are not always without strains, but the centers, by and large, have managed them well.

The host countries' commitment to the centers is reflected in part in the privileges and immunities they have granted them. The privileges and immunities enjoyed by the centers are similar to those given to international organizations and diplomatic missions. Although the true internationality of the legal status

of the centers is a matter of debate among those practicing international law, for all practical purposes the centers are viewed and operate as international organizations.

Two of the centers, CIAT and CIMMYT, were recently reconstituted as international entities through lengthy processes of negotiation and agreement (six and four years, respectively). In the case of CIMMYT, the EMR estimates that this center's new legal status enabled CIMMYT to avoid annual expenditures of about US \$1.0 million. IITA has also modified its headquarters agreement with Nigeria to bring its privileges and immunities in line with those accorded to ILCA and ICRISAT in Nigeria. This 1988 agreement is yet to be gazetted to go into full effect. The ICARDA EMR recommended obtaining expert legal advice on ICARDA's legal status in Syria.

Five factors have influenced maintenance of good relations with institutions in the host countries. First, the ex-officio members of the boards from the host countries serve very useful linkage roles. Several EMRs have noted how these board members have helped solve problems and clarify misunderstandings. The fact that these individuals are highly placed within the government structure helps ensure their effectiveness in stakeholder relations.

Second, some staff at each center carry major responsibilities for liaison with host country institutions. At ICRISAT, a Principal Government Liaison Officer, who is a high ranking official appointed by the Indian government, plays this role. At CIP, both the Deputy Director General and the Executive Officer are nationals of the host country and carry a major role in managing the relations with the Peruvian government. In other centers, there are staff from the host country who play this role. All centers also retain legal expertise, either as full-time staff (as in IRRI), or as consultants.

Third, maintenance of close relationships with a national university or research institution helps build a good image in the host country and a strong ally who can be influential within the national setting. For example, IRRI has very close programmatic links with the University of Philippines at Los Banos (UPLB). IRRI leases its land from UPLB and IRRI senior staff supervise thesis research of UPLB doctoral students and serve as affiliate members of UPLB's graduate faculty. CIAT and the National Agricultural Research Institute of Colombia (ICA) jointly manage the CIAT research station in Carimagua in, what the CIAT EMR judged to be, an exemplary fashion. Most of the other centers have similar close links with one or more key national organizations.

Fourth, the centers have expanded their activities in the area of "public awareness," in part stimulated by the system-wide

recognition of this function through the establishment of the Public Awareness Association. CIP has recently formed a Public Awareness Unit. In other centers the information staff carry a major role in scanning the local and international media and preparing information products describing the center and its contributions to the agricultural sector of the host country.

The information function is extremely important because practically every center (most notably IRRI, IBPGR, IITA, ICRISAT and CIP in recent years) has been the subject of attention in the local and international media. A study conducted as background to the IRRI EMR 1 noted, for example, that during the ten-year period 1975 to 1985 about a thousand articles about IRRI appeared in Philippine publications, of which 7 percent were judged to be unfavorable and 14 percent as neutral. To maintain its good image, IRRI had to prepare factual statements refuting the unfounded charges.

Fifth, the directors accord high priority and devote substantial personal attention to the center's relations within the host country and the immediate community. Their spouses also spend considerable time in fostering these relations, as recognized in several EMRs.

5.2 Relations with Clients and Partners

Agricultural research institutions in the host country constitute a very important client group for the centers located in developing countries. A majority of ICRISAT's activities in India, for example, are geared towards meeting the needs of Indian research institutions. Until recently, there was no national rice research program to speak of in the Philippines and IRRI's work filled most of the void. As noted above, the centers have built and nurtured healthy relations with clients in the country hosting their headquarters.

Generally speaking, the centers' relationships with their clients and partners in other developing countries are also healthy and mutually beneficial. While several recommendations are made for further improving relationships, the general tone of the messages in the EMRs and the EPRs is positive.

The focus of the EMRs in this area is mostly on how a center manages its relationships with its clients (i.e., on the suitability of the mechanisms it has established for building and maintaining healthy connections). The EPRs, on the other hand, focus more on the substance and content of these relationships. The EMR observations are mostly based on the set up at a center's headquarters. The EPR comments, as they rely on wider and more substantive consultation with the center's clients, cover specific aspects of linkages with developing country institutions. For this reason and in order not to present a one-

sided picture, we studied the relevant parts of the last six EPRs (starting with the 1987 IRRI EPR) and took account of their key messages along with those of the EMRs.

Overall impressions. Most of the EMRs spoke of the centers' relationships with national programs in terms such as "excellent," "harmonious," "collaborative," etc. They also complimented the centers for forging mutually beneficial linkages with regional institutions. The CIAT EMR, for example, found CIAT's umbrella agreement with IICA (Interamerican Institute for Cooperation on Agriculture) to be exemplary and noted how the relationship with this institution facilitates CIAT's work with national institutions in Latin America. The centers have individually and collectively forged strong relations with SACCAR (South Africa Centre for Cooperation in Agricultural Research), which also facilitates their links with institutions in Southern Africa.

The recent EPRs echoed the general sentiment of the EMRs, as illustrated by the following quotations:

- "CIMMYT has a cordial and productive relationship with national programs. The Panel was able to confirm this in its field visits, and was pleased to learn that CIMMYT collaboration and support is highly valued" (CIMMYT EPR 3, p.113).
- "In all countries visited by members of the Panel, CIAT staff have established excellent rapport with their colleagues in the national systems. CIAT is viewed as responsive to the expressed needs of the NARS and an important catalyst in motivating local staff and developing research plans" (CIAT EPR 3, p.81).
- "The success story of ICARDA in its first ten years is the way in which it has built up its credibility with the national agricultural research systems in the region and, perhaps just as significant, with their Governments" (ICARDA EPR 2, p.83)... "Equity through partnership has been the aim and it has been achieved in a wide and diverse range of countries from Pakistan through Western Asia to the Maghreb, and in the probe down the Great Rift into Southeastern Africa" (Ibid, pp.116-117).
- "The Panel found during its field visits that CIP's presence in the regions, its willingness to assist and its style of operation were appreciated by developing countries. Almost without exception they liked the proximity of Center scientists for assistance in training, for scientific advice in program planning and for assistance in identifying adapted germplasm" (CIP EPR 3, p.48).

- "Following the MTP (Medium Term Plan), the Institute is strengthening collaboration with the NARS of the region. Several mechanisms are being implemented for that purpose" (IITA EPR 3, p.64).
- "It was clear to the Panel that IRRI's cooperative country programs are contributing in a positive way to the overall strengthening of national capacities, especially in the major rice-growing countries of Asia. However, the Panel identified a number of issues which it wishes to bring to the attention of IRRI as deserving further attention" (IRRI, EPR 3, p.52).

Factors contributing to the centers' client orientation. The recent EPRs and EMRs illustrate that the centers are becoming more and more client-oriented. This is an outcome of several mutually reinforcing trends:

- Most of the centers are increasingly taking a listening attitude toward their clients. Some center staff still take an occasional "we know best" stance in communicating with clients, but this is the exception rather than the norm. There are now more regularly scheduled formal dialogues with clients. ILCA, for example, receives advice from the national leaders of livestock programs in Africa through biennial conferences. Other centers invite national leaders and scientists to their internal reviews.
- As mentioned in Section 2.4, strategic planning efforts of most centers have included intensive consultations with present or potential clients. As a result, there has been a gradual swing toward a "clients' view" in priority setting. The most recent EPRs of ICARDA, CIMMYT, CIAT and IITA applaud the steps taken by these centers to involve their clients in strategic planning efforts. The last IRRI EPR suggested (and IRRI subsequently implemented) greater involvement of leaders of national programs in IRRI's internal planning efforts.
- The centers work with their clients in an increasingly collaborative mode than they did before. As a principle, ISNAR does not get engaged in a diagnostic study of a national agricultural research system without significant participation from the country concerned. The centers are adopting a lower profile in the management of research networks, leaving decisionmaking in the hands of network participants. Collaborative programs of centers with individual countries are always planned jointly.

- Many more of the centers operate in a decentralized fashion than they did before. IBPGR, CIP, CIMMYT, ILCA and ICRISAT have a large percentage of their staff outside their headquarters; IITA and IFPRI have begun to post more of their staff in client countries. Geographic decentralization of staff has helped in the centers' understanding of the needs of their clients and timely delivery of services and advice. Placement of center staff within the administrative structure of a partner country improves communication and creates a positive image, as CIAT, ICARDA, IRRI and other centers have experienced. Although it is largely a symbolic action, moving the director's office to a regional location for a temporary period also helps enhance the credibility of the centers' regional operations.
- The centers are continually searching for linkage mechanisms which will enhance the relevance of center activities to the needs of national institutions. CIP is exploring ways of further improving its decentralized regional organization. CIMMYT has studied systematically the relative strengths of national programs to formulate appropriate linkage mechanisms. Several centers are experimenting with different networking arrangements involving their clients. IITA is exploring the role of the Institute's crop-based systems working groups in collaborative relationships with national programs in order to monitor their strengths in adaptive research so that IITA can develop an appropriate institution building strategy for each national program (IITA EPR 3, p. 62).
- Underlying these positive trends in institutional relationships are scientist to scientist relationships between the centers and their clients/partners which have traditionally been very good. Seminars, workshops and training programs bring center scientists in close and frequent contact with their counterparts in national programs. Many center scientists, in particular research program managers, are frequently "on the road" establishing or renewing contacts with scientists and their managers in national programs.

The centers have made substantial investments to form mutually beneficial relationships with their clients and partners. They continue to explore better ways of linking with national and regional institutions because their success is measured, in part, by their contributions to the success of the national programs.

Continuing challenges. As the above diversity of approaches used by the centers shows, there is no one best way to link the centers' activities with those of their partners in the

developing countries. The last IITA EPR illustrated the complexity of this task in the following words:

"Collaboration in the form of a mature partnership requires involvement of a viable and a committed partner, endowed with a critical mass of trained people and supportive institutional capacity. Few such partners exist in the IITA mandate region; the task of sustaining these as well as building up less developed NARS is daunting. IITA cannot undertake the task alone. Success in this demanding undertaking is a fundamental and long-term proposition which will require the concerted and sustained efforts of African governments, IARCs and enlightened donors" (IITA EPR 3, p. 68).

A center usually formulates its linkage strategy vis-a-vis a given national program or system on the basis of (a) the collaboration the center needs from the national program to implement its (the center's) own strategy and (b) the center's perceptions on what the national program needs from the center to further develop its (the national program's) research capacity. Misunderstandings and tensions are bound to arise in the relationship when:

- The national program finds the demands from a center to be unreasonable, or in conflict with its own priorities and planned activities; or,
- The needs ascribed by the center to a national program differ from the demands or felt needs of the national program itself.

The situation is further complicated by the implicit or explicit expectations from or constraints/norms placed on the centers by the System about their relationships with national institutions. These are in such areas as the following:

- The extent to which the center can serve as a conduit for donor financing of national program activities;
- Substitution of the work of weaker national programs by the centers;
- Transfer of some of the centers' international responsibilities to strong national systems who could play international roles.

Finally, the centers and the System are in search of mechanisms for effective coordination of the centers' individual efforts vis-a-vis a specific national system and the national systems in a specific region.

The issues highlighted above illustrate the complexities faced by each center in managing its relationships with clients and partners. The centers not only are expected to remain alert and respond selectively to these issues, they also need to monitor the constantly changing conditions in developing countries. As communication is perhaps the most effective way of resolving differences, the recent initiatives of the centers for improving their dialogue with their clients and collaborators are a major step forward in this direction.

5.3 Relations with Other Research Institutions

This stakeholder group includes mainly research and learning institutions in developed countries and the international agricultural research institutions (IARCs) within and outside the CGIAR. The centers have a good track record in managing their relationships with both of these groups.

Regarding the first group, each center is generally aware of the competing and complementary work being done in public and private institutions in developed countries. The internationality of the centers' staff mix, coupled with the similar makeup of their donors, enables them to follow the developments in these institutions closely and take advantage of opportunities for joint work. Sabbaticals, visiting scientist appointments and participation of developed country scientists in center workshops and planning conferences help strengthen links with the most important of these institutions. Several centers also contract part of their research to universities or other research institutes in developed countries. This helps foster relations and is sometimes a less costly alternative to doing research in-house.

The centers manage their relations with other IARCs within the CGIAR cautiously, but in a collaborative spirit. Naturally, each center protects its autonomy and looks after its own interests in its relations with other centers. But the areas in which the centers have common concerns are so many that cooperation is in everyone's interest and is often the only "win-win" solution to problems.

Inter-center collaboration has improved markedly in recent years. As mentioned in several places in the paper, the directors are working more effectively as a team, and this has led to better policy coordination across the centers. The Benefits Committee of the center directors' group continues to serve as an effective inter-center coordination forum. More recently, the centers have formed several committees to coordinate their efforts in the areas of fund raising, public awareness, computers, training, information and finance and administration. It is interesting to note that the finance and administration officers recently began a computer conference arrangement (called

"remote electronic meeting") by using CGNET for continuous communication on issues common to the group. We anticipate that use of electronic bulletin boards and computer conferencing will expand within the CGIAR in the future.

Inter-center seminars and workshops, such as on biotechnology and farming systems, help improve communication among the scientists in the System. The establishment of CGNET has had a major positive effect on the frequency and speed of communication across the centers.

Besides these inter-center arrangements, each center manages its bilateral relations with every other center in a unique fashion. Most institutes have "liaison scientists" located at other centers with which they implement a collaborative program. Some centers seek advice from other centers in strategic matters. For example, IRRI invited the directors of WARDA and CIAT to participate in discussions of its draft strategic plan.

The conflicts arising among centers often have to do with overlapping or unclear mandates (such as between CIMMYT and ICARDA on wheat, CIMMYT and IITA on maize, IRRI and WARDA on rice and CIAT and IITA on cassava). The EMRs reported considerable progress in finding solutions to these conflicts. In most instances the boards and management of the centers concerned have arrived at mutually satisfactory solutions without interference from third parties. This speaks well for the spirit of collaboration that exists among the centers as well as for the maturity of the actors involved.

5.4 Relations with Donors and the CGIAR

A significant portion of each director's time now goes to handling relations with donors and the CGIAR. Growth in the number of donors contributing to each center's programs, expansion of special project and restricted core funding and increases in TAC and CGIAR Secretariat requests from the centers require greater care and attention from the directors in the management of these relationships.

Most centers have assigned one or more of their staff to day-to-day coordination of these relationships. ISNAR hired a Project Officer, among others, to look after donor relations on special projects; ILCA set up a small Board and Donor Secretariat; and CIMMYT and CIAT each established Assistant to the Director General positions for this purpose. Others shifted responsibilities among their senior staff to better meet the new needs.

As a result, the centers are better able to (and spend more effort in) monitoring donor trends and exploring new funding

opportunities. They also respond more promptly to requests for information and satisfy the reporting requirements of donors. Expansion of the CGIAR Secretariat's capacity in the area of donor relations has contributed to increases in the centers' knowledge base on each donor.

The centers' approach to their relations with TAC and the CGIAR Secretariat is as much guarded as it is open and frank. The informality of the CGIAR enables all actors to cut corners and avoid bureaucracy. Necessary formal processes, such as the CGIAR's resource allocation and external review systems, are viewed by most centers as a "necessary evil." Nevertheless, they participate in these processes in a cooperative fashion, as noted by all the EMRs.

5.5 Conclusions on Management of Relationships

The centers manage their relationships with major stakeholders with a great deal of care and professionalism. More of the directors' time is now devoted to this task. Also, the centers have established special internal mechanisms for day-to-day management of stakeholder relationships. The fact that each center has a powerful team of allies ("friends of ____" groups) around the globe helps in monitoring trends and building or strengthening relationships.

The institutional interface between the centers and their clients and partners in developing countries is complex and dynamic. Each center is searching for new and better ways of understanding and responding to the needs of its principal clients. There has been notable progress in recent years in the centers' communication with their counterparts in developing countries. This will pave the way for more effective and mutually beneficial relationships in the future.

Modes of collaboration between the centers and developing country national agricultural research systems is a continuing system-wide strategic concern. As such, it is likely to remain an active issue in the CGIAR's agenda at least through the current expansion of the System.

6. MANAGEMENT SKILLS AND TEAMWORK

When speaking of management in the centers most people focus on the director and his deputies or program leaders. These are important, as discussed in connection with leadership in Section 2.3. However, most of the day-to-day work of the center is managed by international and local staff several tiers below the director. A center's success depends on how effectively these individuals channel the energies of their staff in the direction of the center's strategy and toward the accomplishment of operational objectives. The nature of the teamwork among staff in different units and among those working in the same unit also affects the center's performance.

The donors and TAC often think of the centers in terms of programs, budgets and the number of senior staff. The number of total staff is often overlooked in discussions of the centers. We should cite some numbers to illustrate the size of the "people management" challenge facing the centers.

In 1988, about 13,000 people worked in the CGIAR centers. Of these, about 700 (or 5 percent) were in the category called "senior staff." The remaining 95 percent were mainly locally recruited staff. Two of the centers (ICRISAT and IRRI) each employed about 2,500 people. Four centers (CIAT, CIMMYT, CIP and IITA) had more than 1,000 employees; ILCA and ICARDA were each approaching this figure. At IRRI, the heads of some of the disciplinary departments managed more staff than the directors of IFPRI, ISNAR, IBPGR or WARDA. To give another comparison, in 1988 almost twice as many people worked in the CGIAR centers as in the World Bank, although a far greater percentage of Bank staff were recruited internationally.

6.1 Management Skills

Practically every senior staff member in the large centers has a managerial role. In the ten commodity centers there were twenty "other staff" for each senior staff member in 1988. Each senior scientist manages the work of a number of other scientists, research assistants, support staff and field workers in the project(s) he/she works on. Practically all of the administrative units are managed by nationally recruited supervisory staff.

Very few, if any, of the senior scientists have had any formal training in management prior to their joining a center. The same is true of the directors.

To be a good manager one does not necessarily require formal training in management. The reverse is also true: attending management courses does not necessarily make one an effective manager. Some people are by nature or experience more skillful in

communicating with others and in planning, organizing, staffing, delegating, problem solving, motivating, evaluating, etc. These individuals often make good managers. There are also those who learn these skills in management courses, but are unable to practice them in their work setting.

In addition to these behavioral or people-oriented skills, "hard" skills like budgeting, financial management and information management are also important for effective management. These skills do not come by nature and some form of learning is necessary before staff can effectively carry out management tasks which involve them.

As practically all the senior staff of the large centers play managerial roles, how effective are they as managers? The straightforward answer is: we do not know. However, the general feeling we have observed among the center staff is that most would benefit from opportunities for learning or sharpening their skills, on both the soft and the hard side of management. Senior managers who have attended training courses have consistently emphasized the strong contribution of these courses to their work as managers. The directors also place a high premium on management training for their staff.

Progress to date in management training. Recognizing the training needs of their senior managers, some directors encourage them to attend executive development courses offered by universities in North America. Several CIP staff, for example, attended courses of up to ten-weeks duration offered by business schools. Recently, a department head from IRRI attended a one-year program at Harvard University. But, the number of staff attending such courses across the System was far too few compared with the perceived need.

In 1986, the Secretariat, at the request of the center directors and following a study of alternative training programs, organized a four-week pilot inter-center course for sixteen senior managers from the centers. Patterned after the World Bank's management development program for its division chiefs and department directors, this course was very well received. It has been repeated once every year since 1986. A similar three-week executive development program was organized for the directors during 1987-88. To date, about 75 senior managers have attended this program, including the directors. The current plans are to continue this inter-center course as long as there is demand for it.

The Secretariat-organized courses sparked off a wider interest in management training courses. In 1989, at the initiation of CIP, an eight-day course for eighteen regional managers was conducted in Nairobi. A similar inter-center course for regional center staff in Asia was held in 1990.

Several centers have begun organizing similar training courses for their staff. In 1988, ISNAR organized a ten-day course for all its senior staff. In 1989, ILCA organized a one-week course for its senior managers. IRRI organized a project management course for most of its senior staff and is planning to hold a broader management course in the near future. CIAT and CIP have also organized short courses on management topics. ICRISAT, CIMMYT and CIAT, among others, regularly organize management or supervisory courses for their local staff or have them attend courses offered by training institutions close to their place of work.

Further improving management skills. Management training initiatives taken by the centers during recent years are a welcome development. However, for these to make a lasting impact on the quality of management in the centers, they should become part of a center-level management development program, instead of isolated, one-shot instances. Also, management experience should be a criterion in the selection of new senior staff.

In comparison with the situation in the centers, staff development in general and management development in particular are accorded higher priority in other international organizations (like the World Bank) and in private multinationals. All IBM managers, for example, are required to attend at least forty hours of training each year. Siemens and Unilever annually spend about 5 percent of their salary budget on staff training (Ozgediz, 1983).

It could be argued, of course, that the centers do not hire their international staff on a permanent basis as in these other organizations and, therefore, do not need to invest much in developing them. This argument would be valid if the senior staff were hired for specific purposes and limited durations and came to the center already trained and/or experienced in management. But, this is not the case. As we discuss in Section 7.4 below, many of the scientific staff of the centers are either young and inexperienced, or they are long-tenured employees who were recruited when they were young and relatively inexperienced.

Recognizing the need for continuity in management training, three of the centers have begun developing modest management development programs. CIAT is planning to build an in-house capability in management development, with the help of outside experts, geared essentially toward meeting its own needs. ILCA has just had the management training needs of its staff assessed by an outside organization and is having a series of courses conducted to meet them. IRRI has begun doing the same, utilizing the capacity that exists in its own rice-related training program, as was recommended by the IRRI EMR. CIMMYT is studying how it should approach management development in the future.

None of the centers mentioned intend to, nor should they, build costly management development programs with separate staff dedicated to this task. All plan to rely on existing internal resources, supplemented with specialist help from the outside. These efforts will likely provide the needed continuity in management development. As home-grown experiments, they hold more potential for developing center-relevant training courses than the general courses offered by outside institutions.

6.2 Teamwork

The IRRI EMR, repeating a comment from a former IRRI senior staff member, noted that "when IRRI had only one coffee shop, every senior staff member knew what his colleagues were doing. But when a second coffee shop was built, IRRI's informal exchange network was seriously weakened" (IRRI 1, p. 33). Such a situation is not unique to IRRI. As a result of the growth the centers experienced, small, close-knit, institute-wide teams gave way gradually to more compartmentalized work groups. Over time, power structures and some degree of factionalism began to emerge. Geographic decentralization added to the widening of distances among staff. Some of the unity, "one-ness" and excitement that existed during a center's formative years got lost with the growth of the institution.

The IRRI EMR spoke of the strength of the center's informal organization and power structure both as an asset (overcoming red tape and bypassing inefficient formal channels) and a liability (threatening the authority of the management and the unity of the institute). The ICARDA EMR mentioned "manage your unit well, but pay little attention to cooperation across units" as a perceived theme of the center's culture. The CIMMYT EMR talked about the "two centers in one" atmosphere which has existed there from the institute's beginning. The first CIAT EMR complained about the "we versus they" climate that once existed between the administration and program sides of the organization. These are only examples; similar comments were made about the situation in the other centers.

These examples are subjective observations made at a single point in time during the evolution of the centers and do not necessarily reflect the present situation. Clearly, a 2,500 person organization cannot be expected to work as a single unit. To achieve efficiency, specialization and task differentiation is necessary. Units and groups need to be formed, even in collegial settings like those of IFPRI and ISNAR, and everyone cannot be talking to everyone else in getting the job done.

The question is not whether to compartmentalize. It is how to channel the energies of people in departments, units and project teams in the direction of the center's common mission.

When units or groups work at cross purposes with each other, the overall mission suffers. The same is true of work within units.

Any work group goes through several stages of development. According to Bradford and Cohen (1984) most groups go through five phases:

- Membership. This represents the beginning of the work group's life. Members size others up and try to figure out what their place and role will be in the group.
- Subgrouping. Members begin to form cliques and seek support in their subgroup. People with common feelings, interests, styles and views form clusters. There is false unanimity and some cross-group criticism.
- Confrontation. There is open warfare across subgroups for controlling the team's goals, strategy, resources and procedures. "Only when a team is able to fight this way can it break through everyone's resistance against buying into the team's overarching goals, which might be at the expense of their own subunit's comfort and wishes" (Bradford and Cohen, 1984, p. 192).
- Differentiation. Most teams go only as far as this stage. People respond to issues on their merits. "People's loyalty is more firmly attached to their subareas than to the department as a whole. ... Members know what their individual jobs are, what to expect of one another, and what the team can do" (ibid., p. 193).
- Shared responsibility. During this stage "individual uniqueness and collective effort are both valued. The team assesses the issues vital to successfully managing the department, and members keep each other informed without wasting time and trust one another to act, but fight hard and fair over issue-based disagreements" (ibid., p. 194). The team assumes collective responsibility for coordinating tasks.

We do not have direct evidence on what point in the above spectrum teamwork in the centers would fall. Clearly, there would be variations among centers and within teams in each center. Our intuitive feeling, though, is that most center teams would fall in the differentiation stage, occasionally moving back toward confrontation or forward toward shared responsibility.

While we do not have empirical evidence on the quality of teamwork in the centers, it is clear that the climate in the centers for teamwork in the shared responsibility mode is improving. The promising signs include the following:

- The centers highly value and have lengthy experiences in interdisciplinary research. Over the years they have tried and tested various ways of conducting interdisciplinary work. This understanding and knowledge base is a valuable asset in bringing about further improvements in collective work across units.
- Many of the centers have taken a careful and comprehensive introspective look at themselves in connection with their strategy formulation efforts. These have helped clarify their missions, strengthened commitment to shared values and purposes, and removed some rigid barriers to communication.
- The management development efforts of the centers, described above, are helping to improve the communication skills of individuals and to introduce flexibility in styles of management.
- There has been a marked improvement in teamwork among the center directors. They have moved rapidly from subgrouping and confrontation phases toward shared responsibility. This is likely to have a positive influence on their own outlook toward teamwork and ways of facilitating it within each center.
- The move toward project-based management, with clearly identified teams, well-defined project goals and decentralized budgetary authority, is likely to improve teamwork within small work groups.

6.3 Conclusions on Management Skills and Teamwork

In 1988, about 13,000 people worked in the thirteen CGIAR centers, about 700 as international senior staff. Practically all of the latter play managerial roles, yet only a small percentage of them have had previous training or experience in management. Recognizing this, the centers, with assistance from the Secretariat, have collaborated in initiating an inter-center management development program. Also, individual centers are beginning to develop modest in-house management training courses for their international and local staff. These are healthy developments, but they are only a beginning. To make a difference in center performance, they need constant and dedicated support from top management.

There is little empirical evidence on the quality of teamwork in the centers. The centers' lengthy experiences in carrying out their work through interdisciplinary teams, recent advances they have made in participatory strategic planning and internal management reviews and exposure of the senior staff who

participated in management training courses to techniques of effective communication are promising signs for further improvements in teamwork.

7. CROSSCUTTING ORGANIZATIONAL ATTRIBUTES: ADAPTABILITY, ACCOUNTABILITY, EFFICIENCY AND INNOVATION

The earlier sections of the paper focussed on the strengths and weaknesses of the centers in terms of management factors which influence organizational performance. In this section I cover four organizational attributes that derive from good management of the components and factors discussed earlier: adaptability, accountability, efficiency and innovation. The reasons for choosing these four characteristics are as follows:

- Adaptability is generally regarded as one of the most desirable characteristics of any organization. A center's potential to perform well in the future depends to a large extent on its ability to adapt itself to changing circumstances. Rigid and inflexible organizations face survival difficulties, particularly during turbulent times.
- Accountability goes hand-in-hand with autonomy. The donors expect the centers to be accountable for their performance in return for the management autonomy granted them. Also, the donors expect the centers to have strong internal systems of accountability to ensure that the impact of the activities they fund can be assessed at any time.
- Efficiency is another goal valued by the donors and the System. The donors are interested in getting the most value for their contributions. Wastage of resources, top-heavy bureaucracies and slow decisionmaking limit a center's program effectiveness. Continued funding of a center depends, in part, on the efficiency of its operations.
- Innovation and creativity are important for any organization, but they are more so for the CGIAR centers because their main business is generation of knowledge and technology. Management systems and practices of the centers need to foster an institutional climate in which scientists can innovate.

These four organizational attributes, along with the management factors reviewed earlier, influence a center's potential to perform in the future.

7.1 Adaptability

Adaptability is an important criterion for assessing an organization's effectiveness. In a review of seventeen different approaches to assessing organizational effectiveness, Steers

(1976) found that ten of the seventeen models used adaptability-flexibility as an evaluation criterion. It is interesting to note that adaptability-flexibility had the highest frequency of all criteria used in the models studied. Productivity was the next most frequently mentioned criterion (in six of the seventeen models), followed by job satisfaction (five), profitability (three), acquisition of scarce and valued resources (three) and others.

By examining the adaptability of the centers we are not suggesting that they should constantly change in response to every external and internal pressure. This is clearly not desirable as most research carried out by the centers is of a long-term nature and requires a good deal of stability. On the other hand, to maintain the relevance of their programs to the needs of their clients, the centers need to ensure that, as organizations, they have a good "fit" with their (changing) environment at all times. The term adaptability is used here in this latter sense.

The centers' adaptability can be assessed by studying whether they scan and assess the changes in their environments and by examining the flexibility of their internal systems and structures in responding appropriately to these changes.

Scanning the changes in the environment. In Chapter 5 I reviewed how centers manage their relationships with major stakeholders. This discussion shows that the centers, individually and collectively, have built effective mechanisms for scanning and assessing the changes in the CGIAR, other research institutes and their host countries.

The same is generally true for the centers' relationships with their clients. I noted in Chapter 5 that the centers have created new mechanisms to scan and assess client demands and needs. Collectively, they are increasingly taking a listening attitude toward clients. They work more in a collaborative mode with their clients than before. Geographic decentralization of the activities of many centers has enhanced their opportunities to interact with clients on a regular basis. Advances in communication technology have also facilitated the centers' dialogue with some of their clients and collaborators. The centers may not always do what their clients would want them to do and, as a result, their relationships with national programs are sometimes strained. But, the important point is that the centers are generally aware of the (sometimes conflicting) demands of their clients.

The centers also study carefully new or emerging strategic issues. When issues such as sustainability, biotechnology, or focus on Africa gained prominence within the CGIAR, the centers were quick to modify or repackage their programs to respond to

these strategic thrusts. In addition, center scientists who are in contact with peers in developed country institutions follow closely the changes in science. Several of them are at the forefront of these changes themselves.

These features speak well for the centers' ability to scan the changes in their environment. This does not mean, however, that such scanning leads to internal change. Scanning is a necessary but not a sufficient condition for responsiveness.

Flexibility of internal systems and structures. Determining a center's response to external pressures for change is a tough balancing act. As noted above, each center needs to have a certain degree of stability in order to implement its chosen strategy. Yet, some pressures are too strong to ignore. The directors play an important role in balancing the forces for and against change. Dialogue among the center directors helps generate a unified response to pressures from some quarters.

Real change can take place in the centers only if strategies and priorities can be revised, staff redeployed, facilities and equipment modified and organizational structures adjusted.

In terms of their strategies and priorities, I argued earlier that some of the centers introduced major changes following analyses of their external and internal environment (e.g., ILCA, IITA and IRRI). This speaks well for their adaptability. In these and other centers strategic planning has induced some flexibility, particularly in the thinking of staff. Rigid notions began to be challenged. Justification of one's program gained more importance. Thus, through strategic planning, the centers began to provide reasoned responses to external stimuli. Some, such as CIMMYT, established internal mechanisms for continuous stock-taking of the changes in their external environment.

It is too early to tell if the centers' strategic plans themselves will become barriers to adaptability. Normally it should not be so because one of the purposes of strategic planning is to improve the fit between the center and its environment. In centers where planning is viewed as a continuous exercise and measures are taken to maintain the relevance of strategies, strategic planning should serve as a facilitator, not barrier of institutional flexibility. However, if the strategy chosen is too rigid and detailed and the plan begins to serve as a bureaucratic control device, this could stifle individual initiative and discourage deviations from the "party line."

Facilities and equipment can also serve as barriers to change. They are not rigidities per se, as these can be modified if funds are available, but they could slow a center's responsiveness to change. As mentioned in Section 3.3, IRRI

finds many of its facilities to be outdated for performing new tasks. A move toward biotechnology will not be possible without the necessary laboratories and biosafety measures at CIMMYT and other centers.

Staffing patterns present a more difficult challenge. Some international staff have few alternative job opportunities. It is normal for them to resist changes in programs they are responsible for or affiliated with. Termination of local staff, if called for by the desired change, can cause legal problems in the host country. If the external pressures call for downsizing, this is easier said than done as illustrated by the recent experiences of IRRI and IITA. Thus, in many centers the existing staffing patterns are a major constraint to strategic change.

Organizational structure presents another dilemma. As important as formal structures are, informal structures of power and authority often present more significant barriers to change, particularly if change is likely to lead to a new distribution of power. Managing this, what Egan (1988) calls the "shadow," side of the organization, is one of the most important responsibilities of the directors. Thus, EMR after EMR has recommended formal organizational structures different from the existing pattern, which have been resisted (and sometimes on strong grounds) by the centers concerned.

One promising sign is the trend in the centers toward project-based management systems. If coupled with sufficient delegation of management (including budgetary) authority, project-based organizational systems can help remove some of the structural rigidities and facilitate programmatic change when this becomes necessary.

In conclusion, the centers by and large have good systems for scanning the changes in their environment. They do not automatically respond to these changes, in part because of the need for maintaining the stability of their programs. There are also several internal factors which curb their response capacity. As in other facets of center life, the director has a pivotal role to play in assessing the forces for and against change. He/she can cushion some external pressures in order to maintain internal stability. The director also has the authority to soften internal rigidities when this is necessary.

7.2 Accountability

The CGIAR is a System built on confidence. The donors believe in the System's goals and the ability of the centers to implement programs which will achieve these goals. This confidence of the donors in the centers for doing the right

things and doing them right is continually fostered by the mechanisms of accountability. In fact, its emphasis on accountability is an important element in what makes the CGIAR one of the more successful institutional innovations in international development.

During the 1980s the CGIAR's mechanisms of accountability have shown some improvement but more needs to be done. I discuss below the centers' accountability to the donors, to their clients/ partners and internal accountability within the centers.

Accountability to donors. A strong pillar of the CGIAR's accountability system is the external review process which provides donors information on a periodic basis on each center's program and management performance. This process was further refined in 1988 to orient the external program reviews more toward evaluation of center strategies and impact. The external management reviews, as this study illustrates, provide a broad-gauged assessment of center strengths and weaknesses in management. The CGIAR has taken strong actions on several centers (including WARDA, IBPGR, ILCA, IRRI and ICARDA) as a result of the recommendations in the program and management reviews. The EMRs also continue to serve as the major vehicle through which the performance of the boards is assessed, thereby providing a channel for ensuring their accountability to the donors.

The CGIAR's resource allocation mechanism which is managed by TAC and the CGIAR Secretariat provides another means of assessing center performance. This mechanism enables the CGIAR to tie its funding to the past and expected future performance of each center. The new resource allocation system introduced in the mid-1980s is much more performance oriented than the old, incremental budgeting system.

Besides their involvement in external reviews and the resource allocation mechanism, TAC and the CGIAR Secretariat, as a part of their regular duties, monitor trends in the centers. This enables them to provide quick feedback to the centers on areas that require close attention.

The donors have many opportunities to question the centers on any aspect of their work, both privately and in public. Center presentations during the International Centers Week each year are followed by increasingly probing questions from the CGIAR members on center performance and impact. Some donors send representatives to TAC meetings, center board meetings and internal reviews to assess developments firsthand. The centers also respond to specific inquiries from each donor about aspects of their programs and/or management. Also, each center makes a point of informing their donors on major developments.

Accountability to clients/partners. There is no formal direct mechanism for ensuring the centers' accountability to their major clients and collaborators. However, the mechanisms mentioned above take primary account of the relevance of the center programs to the needs of their major clients and partners. In addition, although its effectiveness as an accountability device may be in question, developing country representatives serving as CGIAR members have an opportunity to voice their opinions on the centers' performance. More importantly, the board of each center includes members from developing countries who help ensure the relevance of the center programs to the needs in partner countries.

The centers themselves perhaps do more than the System does in strengthening their own accountability to clients. In this area, the centers have become more alert to needs in partner countries and institutions, as described in connection with adaptability in the preceding section.

Internal accountability. Some of the recent improvements in accountability involve changes introduced by the centers themselves. Some of these changes could turn the centers into increasingly "self accountable" institutions. Major trends include the following:

- As noted in Section 2.2, the boards have traditionally played a strong role in program oversight. Recently, they have participated actively in the centers' strategic planning. Several boards have improved their role in oversight on management matters, including financial auditing. Also, some boards have taken steps to improve their self-accountability.
- In the area of programs, the internal reviews have shown some improvement, but there is scope for more. Impact assessment is weak in most centers and peer reviews are practiced by only a few. There is also room for better connecting internal program reviews to program planning. (See Sections 4.1 and 4.2 for further detail.)
- In the area of management, self-studies conducted by CIP, IFPRI and ILCA are a notable development. Program budgeting is practiced more widely, enabling the centers to better tie program performance to resource allocation. Management information systems are being improved in several centers.
- Performance appraisal of staff remains an area of weakness (see Section 3.1). There is a need to link more closely performance planning and review systems at the individual level.

In conclusion, despite a few areas of weakness where improvements are being made, strong emphasis on accountability continues as a CGIAR tradition. Improvements in the centers' systems of self-accountability (at both the board and the institution level) are a welcome development. Although this does not negate the need for externally imposed mechanisms of accountability, improvements in internal systems will in the future facilitate the externally commissioned processes and lead to greater system-wide efficiency.

7.3 Efficiency

Efficiency of the centers' operations is not well analyzed within the System. This is in part because measurement of efficiency in terms of output per unit of input is difficult in the absence of valid and reliable indicators of center or program outputs. Difficulties are also faced in measuring inputs as the centers use different definitions for factors like "senior staff years." For these reasons the discussion in this section relies less on hard data (and the EMR reports) and more on themes often associated with efficiency.

I should state at the outset that discussion of efficiency should start with an examination of the output, not the input side of the efficiency equation. In the first instance, the centers should be doing the right things before one can judge if these are done efficiently. In this regard, we consider the recent emphasis in the System on strategic planning a healthy sign.

I have excluded from the discussion below the question of "scale" or "minimum critical mass" of a center. The scale question is important, but answers to it have to do more with a center's mission and strategy and with what constitutes optimal organizational design in research institutions. In what follows, therefore, we examine aspects of efficiency given the existing scales of the centers.

The following topics are explored:

- Efficiency consciousness;
- Operating expenditures;
- Staffing costs;
- Efficiency of administrative operations; and
- Efficiency of program operations.

Efficiency consciousness relates to the center's values regarding efficiency. The remaining four topics are geared toward not efficiency itself but some surrogate measures of it.

Efficiency consciousness. Two centers (IFPRI and CIP) immediately come to mind in terms of the emphasis they put in their public statements on efficiency. The following statement from the draft strategic plan (Mellor, 1990) illustrates how efficiency is considered a guiding value at IFPRI:

"It is generous donors who provide this support at a level which maximizes the efficiency of the research effort. We reciprocate by economizing where it does not reduce the effectiveness of the research program. Economizing easily erodes through individual action and thus can only be maintained by a shared pride. We take pride that we have modest offices, purchase carefully, travel economy class, and that our visitors and conference participants do so even when they normally are looked after more lavishly, and at the same time do not hesitate to quickly hire another research assistant, secretary, make an unexpected trip, and bend a rule when research needs it. These are our values and are an integral part of our strategy" (p. 2).

A similar statement (Sawyer, 1989) illustrates the CIP approach to efficiency:

"Adequate funding was available for major facilities for all of the international centers that were planned and developed prior to the 1980s. Whereas most centers built major facilities with program self-sufficiency, CIP was planned and developed during this same period with a very different philosophy. Instead of self-sufficiency, CIP's philosophy was to depend on others to the maximum extent possible. ... Out of this approach came CIP's strategy of very modest facilities and low profile approach... The basic strategy was to demonstrate that high priority research could be accomplished in modest facilities by well trained scientists" (p. 9).

These lengthy quotes are reproduced here to illustrate how two of the centers have elevated efficiency considerations to the level of guiding values. They do not show, of course, that these two are the most efficient among the thirteen centers. Nor do they imply that other centers do not value efficiency. At IITA, for example, the center's strong commitment to and efforts in introducing private sector service standards are geared toward efficiency. The recent drive toward making IRRI a smaller organization is another example.

Efficiency consciousness starts at the top. Espoused values such as the ones quoted above are important, as is the tone set for the rest of the center by the director, the board and senior managers. The size and the trimmings of the director's office does serve as a symbol of cost consciousness, as do the other decisions on expenditures. The incentive structure (the behaviors that are rewarded and punished in the center) also signals how staff should value efficiency.

The increasing emphasis being placed by the boards on management and administrative matters is a good sign for improving efficiency. The IRRI board played a major role in examining (and overhauling) administrative services. The CIAT board recently established an Audit and Operations Review Committee, which is responsible, among other things, for reviewing the utilization of resources across the center.

Operating expenditures. Discussions of efficiency invariably lead to cost comparisons. In 1989, the CGIAR Secretariat conducted a survey of center costs for the period 1983-88. The survey illustrates the difficulties of reaching judgments about relative efficiency among centers based purely on cost comparisons. The survey results, excerpted below, illustrate the differing cost patterns among the centers. The conclusion is that broad comparisons based on unit costs (such as operating costs per senior staff) are not reliable or valid measures due to differences in staff classification schemes and changes in these over time. Nevertheless, we cover below some salient aspects of the data from this survey to illustrate the methodological difficulties faced.

The centers' operating expenditures for their core/essential activities have been rising. According to the survey, over the 1983-88 period the nominal growth rate for all centers combined was an average of 6.3 percent per year, which translates to a real growth rate of 0.9 percent per year. During this period real growth in operating expenditures has been highest at WARDA (15.2 percent), IFPRI (9.3) and ISNAR (6.7) and declined at CIAT (1.4), IITA (2.6) and CIMMYT (1.5). The latter two are largely due to the devaluation of the Naira and the Mexican Peso vis-a-vis the U.S. dollar.

The average increase in expenditures is associated with a comparable increase in the number of senior staff. The average annual increase in the number of senior staff was 2.8 percent, which is about three times higher than the increase in operating expenditures. The average annual increases in the number of senior staff were highest at IFPRI (10.8 percent) and IBPGR (10.2). The number of senior staff did not decline in any center during this period, with the exception of WARDA which was reconstituted as a new center and IITA which underwent a major restructuring of its operations.

These trends only reflect real growth in the System. Had the increases in expenditures not been associated with similar increases in the number of senior staff, they would have raised questions of efficiency. By the same token, the relatively higher rates of increase in the number of senior staff do not necessarily reflect gains in efficiency.

The bulk of the centers' operating expenditures goes toward personnel costs. The following figures show the composition of the centers' operating expenditures over the 1983-88 period:

	<u>Percent</u>
Personnel	60.0
Supplies/services	28.4
Travel	8.1
Replacement of equipment	3.5
Total	100.0

This distribution has remained relatively stable over the period, implying that the cost structure of the operations of the centers has not shifted substantially in aggregate terms. The cost structure of the individual centers differs from these averages. For example, average personnel spending during the period was highest at IFPRI and CIAT (69.6 and 67.8 percent, respectively) and lowest at ICRISAT (53.0). ICRISAT, ILCA and CIMMYT had the highest spending on supplies and services (35.1, 34.7 and 34.2 percent, respectively), and CIAT the lowest (20.1). Spending on travel varied widely. IBPGR, ISNAR and CIP had the highest average percentages (20.0, 15.2 and 13.6, respectively) and ILRAD the lowest (4.4).

One can speculate about the reasons for these figures: ILRAD spends less on travel because its work in basic research requires less travel. By contrast, IBPGR and CIP have decentralized operations and ISNAR's clientele is spread all over the world, thus they spend more on travel. Personnel costs are highest at IFPRI, because IFPRI does not run a physical plant and operates in a high-cost location. By contrast, ICRISAT spends less on staff, because its local labor costs are low. And so on.

The fact is that each center operates in a unique environment and carries out a unique program. The expenditure pattern of each center has a logic of its own. Comparing the expenditure patterns of the centers without a parallel comparison of the differing circumstances can easily lead to faulty conclusions. For example, average annual expenditures per senior staff during the 1983-88 period varied widely across the centers (with a range between US \$205,000 and 439,000). The differences were mostly due to how each center defines its "senior staff."

This does not mean that the center with the highest average was the least efficient.

These methodological difficulties could be partially overcome by comparing a center with itself over time, assuming that the definitions stay the same in each center. But the definitions do not stay the same. Changes in accounting practices occur. What is considered an operating expenditure today may become a capital expenditure item tomorrow.

In conclusion, study of the centers' past operating expenditures does not throw much light on their efficiency. The aggregate figures do not reflect dramatic increases in either direction: toward greater or lesser efficiency. However, the definitional problems faced in conducting this type of analysis underscores the need for either greater uniformity of definitions across the System, or a new analytical framework for making cost efficiency comparisons, or both.

Staffing costs. As personnel costs represent the largest share of the centers' expenditures, questions of efficiency must be directed in the first instance to the size, composition and utilization of staff. There are two key questions related to efficiency: Is there overstaffing? Are the staff overpaid?

There are no clear answers to the overstaffing question. The fact that the numbers of senior (and as a corollary, support) staff have been increasing is probably a reflection of the expansion of the centers' activities. Whether the same job could be done by fewer staff was explored in a few of the EMRs during the course of interviews with the senior program staff. As expected, the general response was that there is little, if any, "fat" in staffing. Perhaps this can be addressed best not by the EMR panels, who carry out only a broad gauged assessment of center management, but by professional firms who specialize in this subject. Also, wider use of peer reviews can generate information on scientific quality as well as the appropriateness of staffing.

As mentioned in Section 3.1, IRRI and IITA are the only centers within the System which have made major reductions in the number of their staff (20 and 13 percent, respectively). In IRRI's case, this reflects a recognition by the board and management that the newly formulated strategy calls for a smaller staff with a different mix than before. In the case of IITA, the reductions were induced by both strategic concerns and a goal to overhaul the administrative systems, including personnel. Implications of new center strategies for staffing have also been studied by the other centers (for example, the CIMMYT strategic plan has a major discussion of this topic), but these have not led to the type of deliberate downsizing IRRI and IITA decided to implement.

The question of overstaffing has an international and a local staff dimension. There is no evidence from the EMRs that there is overstaffing (in terms of numbers) among the internationally recruited staff. The question of their composition and tenure is a different matter and we discuss this issue in Sections 3.1 and 7.4.

The centers have less flexibility in reducing the numbers of locally recruited staff. These staff usually have longer tenure expectations than the internationally recruited staff and their termination is governed by local labor laws. In Peru, for example, the labor law guarantees tenure to employees who have been on their jobs three months or more. Partly as a result of this, the ratio of local to international staff has increased at CIP from 4.7 in 1983 to 6.3 in 1989 (CIP 1, p. 49). Similar legal restrictions exist at IRRI, ICRISAT and some of the other centers.

Thus, there might be greater overstaffing among the locally recruited staff than among international staff at centers which operate a physical plant. Although local staff cost much less than international staff, legal restrictions might make it very costly for a center to terminate local staff if and when a downsizing effort such as IRRI's becomes necessary.

Turning now to the second question raised above, there is no evidence that the staff of the centers (both international and local) are overpaid. In general, market mechanisms dictate what is paid to staff.

Most of the centers have their international staff salaries administered through the Institute of International Education (IIE) in New York. Among other services, IIE provides each center comparative data for the centers on salaries and benefits. In addition, most centers periodically compare their salary and benefit structures with similar organizations. The EMRs have found no glaring anomalies in the salary structures which would cause concern on efficiency grounds (see Section 3.1). The boards have begun playing a stronger oversight role in this area, which is a healthy sign.

The situation is similar with regard to the salary and benefits of locally recruited staff. Local salary surveys are commissioned by the centers on a periodic basis. The centers pay their local staff salaries similar to those paid by competitors in the local market.

In conclusion, notwithstanding questions of "scale" which are not addressed here, there is no hard evidence of overstaffing among the centers' internationally recruited staff. Some centers may have overstaffing among local staff, but reductions are

likely to be costly. In terms of their pay, there is no evidence that international or local staff are overpaid.

Administrative costs and efficiency. There is a perception within the CGIAR community that the centers are becoming more bureaucratic and that this is leading to inefficiency. The term bureaucracy is often used in a pejorative sense: red tape, filling out unnecessary forms, several layers of approval, tight enforcement of rules and procedures, etc. The situation in most of the centers is the exact opposite of bureaucracy in this negative sense.

The centers are by and large unbureaucratic organizations. In fact, for greater efficiency most of the centers need more bureaucracy (in a positive sense) than what now exists. Having no standard procedures for administrative matters (ranging from personnel procedures to purchasing, inventory control and security), or having them on paper but enforcing them selectively (as was the case reported in a recent EMR), leads to greater chaos and inefficiency than having a set of reasonable rules and regulations and enforcing them objectively. In Section 3.3 we discussed the strengths and weaknesses of the centers in this area and will not repeat the arguments here. Suffice it to say that administrative efficiency of several centers can be improved by a careful examination and adjustment of their existing rules and procedures.

I draw attention here to four measures (three of which are "bureaucratic") which can help improve administrative efficiency:

- Instituting charge-back or cost recovery systems for some administrative services can help improve efficiency. As we quoted earlier, the IRRI EMR noted, "when users pay the full cost of the services, they are likely to be better shoppers" (IRRI 1, p. 62). The CIAT EMR echoed a similar sentiment in connection with CIAT's maintenance operations: "We feel that full-cost transfer prices will be an indicator of the unit's efficiency" (CIAT 2, p. 66).
- The internal audit function can help improve efficiency by identifying weaknesses in or non-compliance with existing procedures. This type of operational audit is not yet a common practice in the centers. At IRRI, an operational audit conducted by the internal auditor a few years ago saved the center tens of thousands of dollars in the cost of gasoline.
- Instituting cost accounting procedures, as is now being done in some centers, can enable a center to better monitor costs of administrative and other operations on a regular basis.

- Contracting some administrative services can help reduce the long-term cost of maintaining permanent local staff. The 1984 ICRISAT EMR suggested this; and IRRI is also exploring possibilities for further contracting. Sharing of some contracted services by several centers (such as the CIAT-CIP arrangement to use the same purchasing agent in Miami) can also lead to greater efficiency.

The cost of administering and operating a center with a physical plant amounts roughly to 20 percent of its total expenditures, the remaining going to program and capital expenditures. There is no evidence that this percentage is increasing over time. At CIAT the share of administration and plant operations dropped from 24 percent of total expenditures in 1984 to 17 percent in 1988 (CIAT 2, p. 49). At ILCA it dropped from 22 percent in 1981 to 16 percent in 1985 (ILCA 1, p. 66). At CIP it dropped from 21 percent in 1984 to 19 percent in 1989. At CIMMYT and IRRI it remained about the same (23 and 22 percent, respectively) over recent five-year periods.

Administrative costs include the cost of the board of trustees which is at the level of about 1 to 2 percent of total expenditures. It also includes the salary and benefits of the director. Recently, the CBC initiated a study of director salaries and benefits in comparison with compensation packages for individuals in comparable positions in other organizations. This study will enable the boards to make more informed judgments about director salaries and benefits.

In conclusion, as in any organization, there is room in the centers for further increases in administrative efficiency. But this should be approached with caution as bureaucratization is a double-edged sword: if it is done right it can improve overall efficiency, but the wrong kind of bureaucracy can stifle innovation.

Program efficiency. In the final analysis, the place to look for efficiency increases is where most of the centers' work takes place. I commented above on the centers' administrative efficiency, but equally if not more important is their program efficiency. Program staff could waste resources by making unnecessary experiments, conducting excessive analyses, writing longer than necessary reports, taking extra trips, etc.

I have mixed feelings about the subject of program efficiency. When it comes to activities where the tasks are routine and can be specified fairly clearly in advance, efficiency should be a major concern. In other words, these tasks should be managed for efficiency. However, for activities which aim at innovation, as we argue in Section 7.4 below, managing for efficiency will be counterproductive.

For program activities to be managed for efficiency, the major responsibility is on program and project managers, which means practically all internationally and some locally recruited staff. Their skills in managing staff and tasks determine how the centers' resources are used. The need here, as discussed in Chapter 6, is to expand the centers' management training activities.

Another device is the accountability system. For program activities to be managed for efficiency, units and their managers could be held accountable not just for performance, but for efficient performance. This is likely to happen more easily if efficiency is a guiding value, as in some of the centers.

Conclusions on efficiency. I have said a lot about efficiency, but have really not said much about how efficient or inefficient the centers are. The sketchy and imprecise evidence presented above suggests that there is some room for increasing the efficiency of the centers' routine administrative and program operations and that the centers can and should take steps to bring about improvements. Looking at the efficiency issue in a larger context than the CGIAR can also be helpful. My personal judgment is that the centers are managed more efficiently and with much less bureaucracy (in its negative sense) than public bureaucracies in most donor countries and the international agencies which serve as the cosponsors of the CGIAR.

7.4 Innovation and Creativity

The lead sentence of the conclusions of the IRRI EMR reads: "The key management challenge facing IRRI is how to balance the need for greater efficiency, discipline, and accountability against the goal of maintaining an environment conducive to innovation and creativity." This challenge is repeated in other EMRs, but often without specific suggestions on ways of improving the centers' potential for innovation.

This is in part because factors influencing creativity and innovation in organizational contexts are not well understood. There is no common logic to scientific discovery. The experience of major industrial research laboratories such as DuPont shows that rationalizing innovation or making it more predictable has not been possible. In his review of two major studies on this subject Schrage (1989) concludes that "...the pursuit of innovation systems proves as elusive as it is understandable" (emphasis added, p. 43).

The consensus opinion among students of innovation is that the key to success lies in creating an institutional environment or climate that fosters generation of new ideas rather than managing innovation. We comment below on the most commonly

accepted characteristics of such an environment, with specific reference to the situation in the centers.

Values that reinforce innovation. Thomas Edison has once said: "Genius is one percent inspiration and ninety-nine percent perspiration" (Schrage, 1989, p. 44). This has been the basic philosophy of the crop centers since their founding. Scientific experimentation remains one of the most valued and encouraged principles in all the centers.

The centers' commitment to scientific experimentation suggests that failures are accepted most of the time as a fact of scientific life. However, even when there is no pressure from the management, the scientists put pressure on themselves to minimize failure. This often leads to working on sure bets and taking low risks. A culture of explicit acceptance of failures could lead to greater risk taking by the center staff. Some Japanese firms (e.g., Honda, Hitachi, Olympus) use "freedom of failure" as a key corporate value. Matsushita Research Inc., regularly rewards research teams which have made a great effort, even when the effort was unsuccessful (Kono, 1988). The centers need to examine their incentive structures to remove explicit or implicit barriers to risk taking in research.

Freedom to pursue research on a topic of one's own choice is also important. At some research laboratories (such as 3M and some Japanese organizations) the scientists are allowed to devote 15-20 percent of their time to projects of their own choice, regardless of whether the subjects are emphasized in corporate research plans (Kono, 1988). The current funding and accountability climate in the CGIAR limits the centers' flexibility to create such innovative time for their scientists. Project management systems used by the centers can and should be made to accommodate such flexibility.

Role of leadership. Leadership plays a key role in setting the tone for a center. A control-oriented, bureaucratic tone discourages risk taking. One that builds commitment, enthusiasm, excitement and hope creates an institutional climate open to exploration (Van de Ven, 1986). Some CGIAR center directors excel in building commitment and enthusiasm. Although many are authoritarian, when it comes to science they are less control-oriented and bureaucratic.

Most of the EMRs were very complimentary about the commitment of the center staff to the mission of their center and to that of the CGIAR. Staff are committed and dedicated to their work and most put in long hours, beyond the call of normal duty. Weekend seminars on scientific topics are invariably well attended. Work in a CGIAR center is not seen as a nine-to-five job by the scientists. Although the major credit here is due to

the scientists themselves, the directors also deserve some credit for encouraging commitment to science.

Another key role of the director is to insulate the center from external influences that can limit the flexibility of the research program. The directors, individually and as a group, have also been successful in this area.

Separating innovation from operations. Research is the main business of the centers. But the term "research" covers activities geared toward innovation as well as sundry research service activities which do not have innovation as their central output. The expansion of the centers' mandates to include goals not related to innovation (e.g., strengthening of national institutions) clouds the definition of the centers' "innovation business." Often, everything is lumped under the heading of a "research program." Many scientists play both "innovator" and "operations officer" roles. Creative activity gets mixed with other activities.

One solution to this dilemma lies in insulating the centers' "innovation business" from its other businesses and managing each business differently. Maidique and Hayes (1984) call this "managing ambivalently." The centers' other businesses could be managed for efficiency, whereas their innovation business could be managed for enhancing creativity. Thinking of innovation (not research) as a business also could enable the centers to conceptualize their strategies differently, with a clearer definition of the planned products from innovation. IRRI has set a good example of this by defining a few "man-on-the-moon" projects (such as an upland rice plant with specified characteristics) for completion over a time period.

There is sometimes a misconception that the centers are not in the innovation business because they deal mostly with applied, not basic research. The fact is that creative input may need to be even greater in applied science because it involves using knowledge from more than one discipline. Also, applied research requires knowledge of the full context of the application and how the disciplinary inputs could be used in a specific context. Although the nature of the problems studied are different in basic and applied science, finding solutions to them are equally complex and require a great deal of originality and creativity (Sir Ralph Riley 1990, personal communication).

Quality of facilities. When Edison set up the Menlo Park complex, "he built up what was acknowledged to be the best-equipped laboratory in the United States if not the world--a fact that academic scientists greatly bemoaned" (Hounshell and Smith, 1988, p. 3). When the first CGIAR centers were set up, the same principle was used. The emphasis on having quality research facilities in the centers continues to this day. ILRAD has one of

the best laboratories in the developing world; the scientific facilities of the other centers rival those of developed country institutions engaged in similar lines of work.

The centers' ability to equip their researchers with good facilities and equipment is made possible, in part, by their legal status which provides them with privileges and immunities for importing the necessary research equipment. It also reflects the importance the donors have placed on building a physical environment in which scientific creativity can flourish.

Quality of the scientists. In his study of 500 successful innovations, Donald Marquis (1988) traced the influence of the training and experience of the innovator in coming out with the basic idea and its solution. He found that: "in half the cases, the innovators' training and experience--either on that job or previous ones--provided the key information input. If we add to experience the innovators' personal contacts both in and out of the firm, the percentage rises to fully three quarters" (Ibid., p. 85).

Naturally all innovations are made by people. The finding noted above, traces the main source of the innovation to the personal attributes of the scientist. Thus, his/her recruitment, selection, development, career advancement, etc. are important for fostering innovation in the centers.

There is no direct evidence on how good the center scientists are. This may have been easier to assess had there been a stronger tradition of peer reviews within the System. Isolated data on publications in refereed journals (such as those reported in the recent IITA EPR) raise concern about the situation in some centers. Difficulties faced by some centers in recruitment of good scientists (see Section 3.1) is another cause for concern. A good sign is that the directors -- in particular the scientist-directors -- usually take a keen interest in and most have a good knack for choosing potentially successful scientists.

Long tenures of some center scientists, particularly those for whom jobs equivalent to their positions at the centers are not available elsewhere, remain a dilemma for most centers. To the extent that these long-tenured scientists continue to innovate with the same vigor as younger scientists, the length of tenure should not be an issue. However, most observers of the centers believe that some have fallen into what Katz (1988) calls the "stabilization stage" in job longevity, which in his scheme follows the earlier career stages of socialization and innovation.

According to Katz, changes associated with job longevity include the following:

"Problem solving processes -- increased rigidity, increased commitment to established practices and procedures, increased mainlining of strategies;

Information processes -- increased insulation from critical areas, increased selective exposure, increased selective perception; and

Cognitive processes -- increased reliance on own experiences and expertise, increased narrowing of cognitive abilities, increased homophily" (Ibid., p. 205).

Clearly, these trends do not apply to every long-tenured center staff equally. Nevertheless, if increasing institutional innovation is a goal, the centers need to find new ways of avoiding the entry of their long-tenured staff into a post-innovation stage. Alternatively, they need to assign such staff tasks with less innovation content. Transfers of staff across centers could also help, as a new environment and a new challenge often rejuvenates a person's creative potential. Perhaps the best course is to make clear to applicants during their recruitment that they may be expected to move on to other jobs when they complete their major assignment at the center.

Another important issue is the age of the scientists entering the centers. It appears that most of the recent new recruits to senior staff ranks are young scientists, many joining the center after a post-doctoral appointment. Although there is no comprehensive data on this, the age/experience distribution of the center scientists is perhaps bimodal, with some very young and some relatively mature staff. The centers seem to be attracting relatively fewer scientists in their mid-careers, those who have completed their socialization period and are in the innovative stage. To improve their innovative potential, the centers may need to examine their existing recruitment practices for mid-career scientists.

The centers will need to pay the right price to attract individuals in their mid-careers. Most of these individuals would not be likely to leave a safe and secure job to take one at the centers that has limited career potential. The challenge, responsibility and salary of the position at the center need to be attractive. Also, the candidate may need to be assured that he/she can stay at the center long enough to make a mark in his/her area of interest. Provided the scientists are productive, the centers should try to keep such people as long as they are willing to stay. These staff would normally have little difficulty in finding positions in other institutions (for that matter, nor would the top people in any age group).

Organizational structure. If the scientist is the key to innovation, the organizational structure of the centers should

provide freedom to the scientist to explore options and solve problems. I noted above that one possibility is to insulate the innovative business of the centers from their operational activities and to employ different management systems in each. Management systems suitable for innovation usually revolve around the creation of "entrepreneurial islands"; small, flexible teams; flat organizational structures, etc. According to Quinn (1988), who conducted a major study of large, innovative enterprises, "neither structured formality nor unstructured chaos will work well alone. Innovative companies seem to evolve a sophisticated approach to 'managed chaos' which recognizes the realities of how major technological innovations evolve and harness this process to corporate needs."

The organizational structures of the centers have been shifting over the last few years toward project-based matrix management systems (see Section 4.3). A matrix organization structure is suitable for interdisciplinary research, and using a "project" as the basic unit of research provides sufficient structure to the totality of a center's program. The challenge facing the centers is how to maximize the project team's and the individual scientist's autonomy within this type of a research structure.

Having too many projects can easily lead to over-structured formalization and bureaucracy. Similarly, limiting the decision-making autonomy of the project team or introducing tight budgetary, milestone or performance controls can limit the scientist's freedom. If the CGIAR System and the centers are seriously committed to generating innovation, some degree of "managed chaos" should be introduced to enhance the innovative potential of the centers.

Most creative people do not fit easily into organizational settings. "Creativity is distinguished from productivity in that productivity gets things done by following an established way, while creativity does so by not following the established way" (Ijiri, 1988, p. 67). Administrators and bureaucratic managers dislike such people because they do not conform to accepted norms and take greater risks. If the organizational structures of the centers were to be modified to allow "managed chaos" to take place in the innovation side of the centers' business, the directors would need to protect the "chaos" from excessive administrative control and keep the "creative misfits" from center activities where their personalities could create conflicts the centers cannot afford (e.g., with clients in the host countries and elsewhere).

In conclusion, the centers possess many of the institutional characteristics required for nurturing innovation and creativity: good facilities, supportive leadership, capable staff and a long-term tradition of experimentation. The work of the centers has

become more complex over time with the introduction of new goals and activities. To improve their innovative capacity, the centers need to better insulate innovative activities, create free time for the scientists, encourage risk taking, and minimize administrative controls on project teams working toward innovation. Also, recruitment practices need to be examined to allow the entry of scientists in mid-careers, and new roles or jobs need to be found for long-tenured staff who no longer have the same innovative potential as they earlier had in their careers.

8. CONCLUSIONS

Clearly, as discussed in previous chapters, the centers have made impressive progress during recent years in improving their management. Yet, there is more to be done, as argued by the individual EMRs and as noted above.

In this chapter I first provide a summary of the specific conclusions reached in the preceding chapters. Then broad conclusions on the current state of management in the centers are provided.

8.1 Summary of Specific Conclusions

Table 8.1 summarizes the main messages emerging from this study. The first column lists the specific areas of management considered in various chapters. The second column summarizes the conclusions reached earlier on the progress made over the last four to six years by the centers in each management area. This is expressed in terms of a three-point each scale: major, moderate and minor. Each of these terms is intended to reflect both the quantitative and qualitative aspects of the progress made. For example, where the centers' progress is identified as "major," this indicates that the advances made were significant and substantial in terms of improving the overall management effectiveness of the centers. The same scale is used in the third column to express the need for further improvement. When a need for further improvement is specified, the last column outlines the areas requiring attention, along the lines discussed in the paper.

Clearly, a great deal of judgment is involved in summarizing the centers' past progress and future needs in this fashion. In making these judgments, I relied heavily on the weight of the evidence provided in the earlier chapters. Thus, the quality and accuracy of the conclusions reached here are only as good as the data and analysis presented earlier.

The observations in Table 8.1 do not apply to any one center specifically. They refer to an imaginary center which reflects the management strengths and weaknesses of all the centers combined. Each center, though, can draw its own conclusions on the implication of these overall findings for management at that center. When the evidence indicates a need for major further improvement, it usually implies that this is the case in a majority of the centers in the System.

Areas of progress. Table 8.1 shows that the most significant improvements in center management during recent years were in the following areas:

TABLE 8.1 Summary Of Main Messages

<u>Management Component/ Factor</u>	<u>Recent Improvements</u>	<u>Need for Further Improvement</u>	<u>Areas Requiring Attention</u>
<u>CENTER GUIDANCE</u>			
Guiding Values	Moderate	Moderate	- values on innovation, efficiency and human resources
Governance	Major	Major	- policy level of board's operations - board planning - members with board leadership potential - CGIAR nominees - interlocking boards - frequency of meetings - review options for system-wide structural reorganization
Leadership	Minor	Moderate	- decentralization of decisionmaking - building a cadre of "effective followers"
Strategy Formulation	Major	Moderate	- keeping strategies current
<u>RESOURCE MANAGEMENT</u>			
Human	Moderate	Major	- active, forward-looking stance - professionalization of the personnel function - performance planning and assessment - career development - recruitment of high quality scientists - recruitment of women - codification and uniform enforcement of personnel policies - policies on turnover of senior staff - periodic studies of existing skill mix against job requirements

<u>Management Component/ Factor</u>	<u>Recent Improvements</u>	<u>Need Further Improvement</u>	<u>Areas Requiring Attention</u>
Financial	Moderate	Moderate	<ul style="list-style-type: none"> - decentralization of budgeting - financial management in field locations - auditing - cash and liquidity management
Administrative Services	Moderate	Major	<ul style="list-style-type: none"> - maintenance of physical facilities - administration in field offices - cost-recovery/charge-back systems - contracting for services
Information	Major	Major	<ul style="list-style-type: none"> - fragmentation of information functions - clarifying centers' role in strengthening national information programs - review of library/documentation services - archives/records management - management and governance information systems - coordination of efforts across centers
<u>TASK MANAGEMENT</u>			
Operational Planning	Moderate	Moderate	<ul style="list-style-type: none"> - review of planning systems - project-level planning - performance planning at the individual level
Program Review	Minor	Major	<ul style="list-style-type: none"> - impact assessment - tracking strategy implementation - peer reviews - review of internal review systems
Organizational Structure	Moderate	Major	<ul style="list-style-type: none"> - vertical decentralization - operating in matrix mode - project management

<u>Management Component/ Factor</u>	<u>Recent Improvements</u>	<u>Need Further Improvement</u>	<u>Areas Requiring Attention</u>
<u>RELATIONS WITH STAKEHOLDERS</u>			
Host Country	Moderate	Minor	
Clients	Major	Major	<ul style="list-style-type: none"> - modes of collaboration between the centers and national programs - better understanding of client needs
Other Research Institutes	Major	Minor	
Donors and the CGIAR	Moderate	Minor	
<u>MANAGEMENT SKILLS AND TEAMWORK</u>			
Management Skills	Major	Major	<ul style="list-style-type: none"> - management and supervisory training
Teamwork	Moderate	Minor	<ul style="list-style-type: none"> - project management and team-building training
<u>CROSS-CUTTING ATTRIBUTES</u>			
Adaptability	Moderate	Moderate	<ul style="list-style-type: none"> - flexibility of internal systems and structures
Accountability	Moderate	Moderate	(Same as for program reviews)
Efficiency	Moderate	Don't Know	<ul style="list-style-type: none"> - periodic studies of existing staff mix against job requirements - administrative efficiency - program efficiency
Innovation	Minor	Major	<ul style="list-style-type: none"> - insulating innovative activities - creating free time for scientists - risk taking - administrative controls on scientists - recruitment of mid-career scientists

- Governance,
- Strategy formulation,
- Information management,
- Relations with clients/partners,
- Relations with other research institutes, and
- Management skills.

Progress in most of the remaining areas has been moderate.

Needs for further improvement. The areas requiring the most improvement are the following:

- Governance,
- Human resource management,
- Administrative services,
- Information management,
- Program reviews,
- Organizational structure,
- Relations with clients/partners,
- Management skills, and
- Innovation and creativity.

Four of the nine areas listed above relate to management of resources (human resource management, management skills, administration and information management). Among these, human resource management requires perhaps the greatest attention as issues related to this area appear in several other places in the last column of Table 8.1: values on human resources (guiding values), performance planning at the individual level (operational planning), management and supervisory training (management skills), project management and team-building training (teamwork), periodic studies of existing staff mix against job requirements (efficiency) and recruitment of mid-career scientists (innovation).

Further examination of the last column of Table 8.1 also shows that decentralization of decisionmaking authority is another area requiring close attention. This is mentioned under leadership and repeated in several other places with different

labels: decentralization of budgeting (financial management), project-level planning (operational planning), vertical decentralization and project management (organizational structure), and insulating innovative activities and creating free time for scientists (innovation).

Measures related to internal planning and review systems also appear in several places in Table 8.1 (operational planning, program reviews and accountability). Here, the most important needs are in the areas of impact assessment, tracking strategy implementation, peer reviews and study of internal planning and review systems. When added to the relatively self-contained suggestions for improving governance, these three groups of measures (management of resources--in particular, human resources, decentralization of decisionmaking, and internal planning and reviews systems) cover a majority of the areas singled out in Table 8.1 for greater attention.

I was not able to assess the needs for further improvement in efficiency because of insufficient evidence on the potential for further improvements in this area. Nevertheless, efficiency gains would be a by-product of many of the suggestions summarized in Table 8.1.

Role of momentum. Many of the areas where there is need for major or moderate further improvement in the management of the centers are also areas in which the centers have made significant progress in recent years. This is illustrated in Table 8.2 which presents the information in the second and third columns of Table 8.1 in the form of a matrix. This means that the centers, by and large, are on the right track for management improvement. To become more effective, however, they need to continue this momentum into the future.

One striking feature of Table 8.2 is that some of the areas in which the centers have made major progress in recent years are also areas in which there is still a major need for further improvement (e.g., governance, information management, relations with clients and management skills). This means that, in general, these areas of management were rather weak several years ago.

8.2 Broad Conclusions

Looking at management of the centers in a broader sense, five main conclusions were reached:

- Center guidance, which covers the "macro" aspects of management, is becoming an increasing strength of the centers, which is a very healthy sign.

- Stakeholder relationships is another notable strength, one the centers can capitalize on in the future.
- Improving the quality of staff remains a continuing challenge and should be given priority.
- The recent progress made in managing resources and tasks should be sustained and accelerated.
- There is need for new thinking and attention to the centers' impact and efficiency.

I elaborate below on these broad themes.

Table 8.2 Comparison of the Centers' Recent Improvements in Management with Needs for Further Improvement

Recent Improvements	Major	- Relations with other research institutes	- Strategy formulation	- Governance - Information management - Relations with clients - Management skills	
	Moderate	- Host country relations - Relations with donors/ CGIAR - Teamwork	- Guiding values - Financial management - Operational planning - Adaptability - Accountability	- Human resource management - Administrative services - Organizational structure	- Efficiency
	Minor		- Leadership	- Innovation - Program review	
		Minor	Moderate	Major	Don't Know
Needs for Further Improvement					

Center guidance: an increasing strength. Perhaps the healthiest sign about management in the centers is that the "macro" aspects of management have improved considerably in recent years. "Macro" refers to how well the centers are led and how their strategies and broad policies are formulated, as contrasted with the "micro" or procedural aspects of management. Three factors have contributed to this progress: leadership shown by the directors, improvements in board operations and strides made in strategic planning.

The directors play a pivotal role in all aspects of macro management. The guiding values of many centers often parallel those of their directors. The boards depend on the director for guidance and information. The director has the strongest voice in the formulation of center strategies. He/she makes all important (and some not-so-important) decisions, and is also the "orchestrator" and the major actor in the center's external relations.

Thus, a center's success depends to a large extent on the performance of its director as leader and manager. Although their styles of leadership differ, the directors, on average, have performed well as chief executive officers of the centers. Also, the boards have improved their performance in appointing, assessing and dismissing the director, which is a good sign for the future leadership of the centers.

The boards have also improved their performance in other areas. Although their role in policymaking is mainly reactive, they are now more involved in determination of major center policies, as evidenced by their intensive participation in the preparation of strategic plans. The attention they place on oversight of financial and administrative matters has also increased.

Perhaps more significantly, the centers have made important strides in examining their strategies and program directions. Although we have not examined the substantive content and potential effectiveness of center strategies, the processes used by the centers in formulating them are generally thorough and ensure consideration of important strategic issues and concerns of key stakeholders.

Despite this notable progress, there is ample room for further improving macro management. The most important need in many centers is reducing the macro management burden (and the centers' dependence on these matters) on the director. For this, the directors will need to share their leadership and management roles more widely within their respective centers. Also, the boards will need to be composed of more strategic-minded people.

This is not meant as a recommendation to have weaker leaders at the centers. On the contrary, each center should have at its helm a strong leader and this person should spend most of his/her time in exercising leadership. However, leadership should not be seen as a responsibility only of the director. Each and every manager, from project managers to the deputy director, should be encouraged and given the authority to exercise leadership in the areas they are responsible for. This is one reason the EMRs have called for greater decentralization of authority in the centers.

Stakeholder relationships: another notable strength. The "fit" between the centers and their external institutional environment is generally very good. This important strength ensures that they can take advantage of emerging opportunities and can overcome threats in a timely manner. This overall assessment applies particularly to the centers' relationships with their host countries, donors, sister research institutions and the CGIAR.

Concerning relationships with clients/partners, the work of the centers is greatly appreciated by them, as illustrated by the assessments made by the EMRs and the recent EPRs. This is in part because the centers are increasingly taking a listening attitude vis-a-vis their clients and operate more in a collaborative mode with them. Geographic decentralization of center activities in recent years has also contributed to their understanding of the needs of key clients. Scientist-to-scientist relationships between the centers and their partners in developing countries have always been a strong suit of the centers.

The centers' relationships with their clients are not without strains. The national programs' expectations of the centers do not always match the centers' assessment of their clients' capacities and needs. Also, the links between a national agricultural research system and all centers under the CGIAR umbrella (and the donors providing assistance to that System) need better coordination.

The challenges in the System's relationships with national programs are recognized by all of the major actors. Although no clear solutions are in sight, the fact that there is effective communication between the centers and their clients is a strong encouraging sign for paving the way for further increases in the relevance and the cost effectiveness of the centers' work with their collaborators in developing countries.

Improving the quality of staff: a continuing challenge. In the final analysis, the quality of the work of a research institution depends in large measure on the quality of its staff. The general message emerging from the EMRs is that the centers are staffed with many first-rate scientists and administrators and with good support staff. However, this conclusion is based on

impressionistic evidence, not on direct and thorough empirical analysis of staff quality. Had there been a stronger tradition of peer reviews within the System or had the external reviews carried out systematic analyses of quality indicators (such as publications in refereed journals), it would have been easier to reach a stronger conclusion on staff quality.

Improving the quality of staff is a continuing challenge in any institution, but perhaps more so in the CGIAR centers because of the changing nature of their research work. The senior staff need to be fully knowledgeable about recent advances in their scientific disciplines, and, as a group, they need to satisfy the skill requirements of the programs and projects in the center's agenda. This implies that the centers need personnel policies which will ensure turnover when this is necessary, but will also enable them to keep first-class staff with exceptional talents as long as possible. Renewable, fixed-term contracts should be a norm at all the centers.

The centers should be prepared to pay the price needed to attract first-class senior staff, especially those in their mid-careers. Improving the gender balance among the ranks of senior staff and top management should be given high priority. As practically all senior staff play managerial roles, upgrading their managerial skills also requires close attention.

Management systems and procedures: need to sustain the recent progress. The centers have made considerable progress in improving the "micro" side of their management in recent years. The most notable advances were in the area of information management, in part a result of the responsiveness of the centers to the worldwide changes in information technology. Progress in the areas of operational planning and management of human, financial and administrative resources has been notable, but uneven across the centers.

Three factors account for many of the achievements to date: (1) increasing collaboration among the centers in finding solutions to common problems faced in administration and finance; (2) initiation of internal management reviews by some of the centers; and (3) increasing attention by the boards to oversight on financial and administrative matters. In addition, the EMRs have played an important role in drawing the centers' attention to management matters and in instigating changes in specific areas.

The centers need to sustain their recent progress in improving their management systems and procedures in order to overcome the remaining challenges. In human resource management, in addition to the concerns on staff quality concerns raised above, the most important challenge is to turn personnel management from a passive, bureaucratic operation to a dynamic

and forward looking activity. In financial management, there is further need to improve cash and liquidity management, auditing and project-based budgeting systems. In the area of administrative services, the greatest need is to seek ways of increasing efficiency. The information management function at most centers requires careful strategic analysis to eliminate fragmentation and to reassess information needs and priorities. Finally, strengthening resource management at field offices requires top priority in all geographically decentralized centers.

Impact and efficiency: need for new thinking and emphasis.

While improving the traditional areas of management is necessary for increasing their overall organizational performance, there is a prior and more urgent need to rethink the results and efficiency orientation of management at the centers. As there is no better measure of the centers' effectiveness than their impact, management improvements must be judged, in the first instance, in terms of their potential contribution to increasing the center's overall impact. In addition, efficiency considerations must be brought to the fore because greater efficiency means more impact per unit of the increasingly scarce donor funds.

Emphasizing impact in center management should start with greater priority to impact assessment activities. This should be coupled with new thinking at each center on ways of monitoring the implementation of their strategies. The needs for impact assessment and tracking strategy implementation may call for an overhaul of the centers' current internal program review processes. Greater attention to peer reviews is also necessary at most centers for better assessing the quality of their work.

A greater emphasis on impact, coupled with good strategic planning, should ensure that the centers are "doing the right things." To also ensure that they are "doing things right," the centers need to examine closely their guiding values, organizational structure and management systems, particularly in terms of their client orientation and conduciveness toward innovation and creativity. While there is no single solution that could apply equally to all centers, strategies such as insulating innovative activities from others, creating free time for scientists, encouraging risk taking, decentralizing authority and minimizing administrative controls on staff teams working on innovation-oriented projects might be effective in improving the centers' innovation potential.

Efficiency should be less of a concern when a center does the right things and does them right.

8.3 A Closing Comment

The formula for good management at international agricultural research institutions has not changed much since the early years of IRRI and CIMMYT: Pick an important problem that needs urgent solution, find a strong leader with a clear vision on solving that problem, let him/her select the best scientists money can buy, provide them with the facilities, staff and encouragement they need to do research, and leave them alone to do their work with the least possible controls. To the extent that they continue to follow this formula, management effectiveness should not be a concern at the centers. By the same token, as their rationale is based mostly on these principles, the suggestions made in this paper should help strengthen management at the centers.

ANNEX 1. ABOUT THE CGIAR

The Consultative Group on International Agricultural Research (CGIAR) is an informal association of governments, international organizations and private institutions, cosponsored by the World Bank, the Food and Agriculture Organization of the United Nations (FAO) and the United Nations Development Programme (UNDP). The CGIAR first met in 1971 when members agreed to support, on a sustained basis, a well-defined and closely monitored program of research on food commodities and on food production in agroecological zones. The CGIAR operates without a formal charter, relying on the consensus deriving from a sense of common purpose.

The CGIAR started with a nucleus of four existing international agricultural research centers -- CIAT, CIMMYT, IITA and IRRI -- established by the Rockefeller and Ford Foundations in Colombia, Mexico, Nigeria and the Philippines, respectively. At the start, 15 donors provided about US\$20 million. The number of centers has since increased to 13, supported by 40 donor members and other contributors who provided about US\$282 million in 1989.

Each center supported by the CGIAR is independent and autonomous, with a particular structure, mandate and objectives, and each governed by an international board of trustees. Some centers focus on one commodity for which they have a global mandate, while others have a regional or ecological mandate with, in some cases, a global mandate for one or more commodities. Others perform specialized functions in the fields of food policy research, genetic resource conservation, and strengthening national agricultural research in developing countries.

The programs of the commodity-oriented centers vary, but common components include genetic resource conservation and classification; biological research to increase yields by genetic improvement and greater resistance to pests and diseases; farming systems studies to better understand farm-level constraints and improve traditional practices; and training and other activities to strengthen national research systems.

The CGIAR's objectives have recently been summarized by its Technical Advisor Committee (TAC) as follows: "Through international research and related activities, and in partnership with national research systems, to contribute to sustainable improvements in the productivity of agriculture, forestry and fisheries in developing countries in ways that enhance nutrition and well-being, especially among low-income people.

TAC comprises a chairperson and 18 scientists drawn equally from developed and developing countries. The committee makes recommendations on research programs and priorities, monitors performance through program and budget reviews, and supervises

periodic external reviews of the centers undertaken by panels of independent scientists. TAC is supported by a Secretariat, provided by the three cosponsors of CGIAR and located at FAO headquarters in Rome.

The CGIAR is also served by a Secretariat, located in Washington, D.C. and provided by the World Bank. The Secretariat reports to the CGIAR chairperson, a vice president of the World Bank designated by the Bank's president after consultation with CGIAR members. It coordinates fund raising among the donor members and organizes two meetings of the members each year. Besides providing administrative services, the Secretariat helps keep donors informed about the scientific programs, finances and management practices at the centers.

Meetings of the CGIAR are held twice a year, once in Washington, D.C. in October/November and once elsewhere in May. The meetings receive and discuss recommendations on overall research strategy, programs and budgetary needs of individual centers and management issues pertaining to the centers as a group. Critical independent reviews of center performance are presented and discussed. Developing country interests are represented by several donors from this group of countries, and by ten delegates selected by regional conferences of FAO.

Individual donors allocate their contributions to centers of their choice. The World Bank balances the centers' finances by making up as much as possible of the difference between approved budgets and collective donor contributions.

CGIAR MAJOR CROPS AND ACTIVITIES

Objectives	Center	Regional focus
Banana, plantain	INIBAP	Developing countries*
Barley	CIMMYT	Latin America
	ICARDA	Developing countries
Cassava	CIAT	Developing countries
	IITA	Sub-Saharan Africa
Chickpea	ICRISAT	Developing countries
	ICARDA	North Africa/Middle East
Cocoyam	IITA	Developing countries
Cowpea	IITA	Developing countries
Faba bean	ICARDA	Developing countries
Groundnut	ICRISAT	Developing countries
Lentil	ICARDA	Developing countries
Maize	CIMMYT	Developing countries
	IITA	Sub-Saharan Africa
Millet	ICRISAT	Developing countries
Pigeonpea	ICRISAT	Developing countries
Potato	CIP	Developing countries
Pastures	CIAT	Latin America
	ILCA	Sub-Saharan Africa
<u>Phaseolus</u> (field bean)	CIAT	Developing countries
Rice	IRRI	Developing countries
	CIAT	Latin America
	IITA	Sub-Saharan Africa
	WARDA	West Africa
Soybean	IITA	Sub-Saharan Africa
Sorghum	ICRISAT	Developing countries
Sweet potato	CIP	Latin America
	IITA	Developing countries
Triticale	CIMMYT	Developing countries
Wheat	CIMMYT	Developing countries
	ICARDA	North Africa/Middle East
Yam	IITA	Developing countries
Livestock	ILCA	Sub-Saharan Africa
Theileriosis	ILRAD	Sub-Saharan Africa
Trypanosomiasis	ILRAD	Sub-Saharan Africa
Food policy	IFPRI	Developing countries
Plant genetic resources	IBPGR	Global
National research systems	ISNAR	Developing countries
Agroforestry	ICRAF	Developing countries*
Irrigation management research	IIMI	Developing countries*

* Joined the CGIAR System in 1990.

ANNEX 2. THE CGIAR CENTERS*

Center	Acronym	Location	Founded	Budget US\$ Million	Senior Staff	Main Activities
Centro Internacional de Agricultura Tropical	CIAT	Colombia	1987	28.1	100	rice, beans, cassava, forages, pastures
Centro Internacional de Mejoramiento de Maiz y Trigo	CIMMYT	Mexico	1988	27.1	140	maize, wheat, barley, triticale
Centro Internacional de la Papa	CIP	Peru	1971	18.7	31	potato, sweet potato
International Board for Plant Genetic Resources	IBPGR	Italy	1978	7.1	39	plant genetic resources
International Center for Agricultural Research in the Dry Areas	ICARDA	Syria	1978	21.4	70	wheat, barley, chickpea, lentils, pasture legumes, small ruminants
International Crops Research Institute for the Semi-Arid Tropics	ICRISAT	India	1972	29.5	110	sorghum, millet, chickpea, pigeonpea, groundnut
International Food Policy Research Institute	IFPRI	U.S.A.	1975	11.2	45	policy analysis
International Institute of Tropical Agriculture	IITA	Nigeria	1987	23.5	165	maize, cassava, cowpea, plantain, soybean, rice, yam
International Livestock Center for Africa	ILCA	Ethiopia	1974	20.2	66	livestock, forage
International Laboratory for Research on Animal Diseases	ILRAD	Kenya	1974	13.5	60	theileriosis, trypanosomiasis
International Rice Research Institute	IRRI	Philippines	1980	30.8	90	rice
International Service for National Agricultural Research	ISNAR	Netherlands	1979	7.5	36	national research systems
West Africa Rice Development Association	WARDA	Cote d'Ivoire	1971	6.4	32	rice in mangrove swamps, inland swamps, upland and irrigated conditions
International Council for Research in Agroforestry	ICRAF	Kenya	1977**	9.9	35	agroforestry
International Irrigation Management Institute	IIMI	Sri Lanka	1984**	8.0	28	irrigation management research
International Network for the Improvement of Banana and Plantain	INIBAP	France	1984**	2.5	NA	banana, plantain

* Source: Facts and Figures -- International Agricultural Research, May 1990 data (the Rockefeller Foundation and IFPRI).

**These centers, though funded earlier, were formally accepted as CGIAR centers in 1990.

ANNEX 3. EXTERNAL MANAGEMENT AND EXTERNAL PROGRAM REVIEWS

Note: The following is a list of all external management reviews of CGIAR centers conducted to date*. In parallel with the notation used in the text, the name of the center is followed by a number indicating whether it is the first or the second management review. The full bibliographic citation is then followed by the names of the panel members, starting with the chairperson of the panel. A list of those external program reviews cited in the report is also included.

- CIAT 1. 1984. Report of the First External Management Review of the Centro Internacional de Agricultura Tropical (CIAT). Washington, D.C.: CGIAR Secretariat. (Omond Solandt, Edmund Zdyb, Emilio Madrid).
- CIAT 2. 1989. Report of the Second External Management Review of the Centro Internacional de Agricultura Tropical (CIAT). Washington, D.C.: CGIAR Secretariat. (Vijay Vyas, Kenneth Hoadley, Joan Joshi).
- CIMMYT 1. 1988. Report of the First External Management Review of the International Maize and Wheat Improvement Center (CIMMYT). Washington, D.C.: CGIAR Secretariat. (Don Mentz, Joan Joshi, Pervaiz Rashid).
- CIP 1. 1983. Report of the First External Management Review of the International Potato Center (CIP). Washington, D.C.: CGIAR Secretariat. (Omond Solandt, Raymond Audet).
- CIP 2. 1989. Report of the Second External Management Review of the International Potato Center (CIP). Washington, D.C.: CGIAR Secretariat. (Lowell S. Hardin, John Doran, Max Birrell).
- IBPGR 2. 1985. Report of the Second External Program and Management Review of the International Board for Plant Genetic Resources (IBPGR). Washington, D.C.: CGIAR Secretariat. (Max F. Day, John Barton, M. Yousaf Chaudhri, Jaap Hardon, William Tossell, Alejo von der Pahlen).
- ICARDA 1. 1984. Report of the First External Management Review of the International Center for Agricultural Research in the Dry Areas (ICARDA). Washington, D.C.: CGIAR Secretariat. (John Hirst, Ahmed El Jack, Ibrahim Ozer Ertuna).
- ICARDA 2. 1988. Report of the Second External Management Review of the International Center for Agricultural Research in the Dry Areas (ICARDA). Washington, D.C.: CGIAR Secretariat. (John Dillon, Jacob Hautaluoma, Dogan Sindiren, Miles Wedeman).

* As of April 1990.

- ICRISAT 1. 1984. Report of the First External Management Review on the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). Washington, D.C.: CGIAR Secretariat. (Luis Crouch, Julio Cross, D.K. Desai, William Gormbley).
- IFPRI 1. 1984. Report of the First External Management Review of the International Food Policy Research Institute (IFPRI). Washington, D.C.: CGIAR Secretariat. (Michael Arnold, John Dearden).
- IITA 1. 1983. Report of the First External Management Review of the International Institute of Tropical Agriculture (IITA). Washington, D.C.: CGIAR Secretariat. (Luis Crouch, Adolfo Grandchamp, Joan Joshi, James Lynch).
- IITA 2. 1990. Report of the Second External Management Review of the International Institute of Tropical Agriculture (IITA). Washington, D.C.: CGIAR Secretariat. (Ralph Riley, Raymond Audet, Paramjit Sachdeva).
- ILCA 1. 1986. Report of the First External Management Review of the International Livestock Centre for Africa (ILCA). Washington, D.C.: CGIAR Secretariat. (Lowell Hardin, Jon Moris, Pervaiz Rashid, Selcuk Ozgediz).
- ILRAD 1. 1986. Report of the First External Management Review of the International Laboratory for Research on Animal Diseases (ILRAD). Washington, D.C.: CGIAR Secretariat. (Frank Raymond, Rajaram Ramanathan).
- IRRI 1. 1987. Report of the First External Management Review of the International Rice Research Institute (IRRI). Washington, D.C.: CGIAR Secretariat. (Lowell Hardin, K. Arichandran, Clark Wilson, Selcuk Ozgediz).
- ISNAR 1. 1985. Report of the First External Management Review of the International Service for National Agricultural Research (ISNAR). Washington, D.C.: CGIAR Secretariat. (William Tossell, Tilo Ulbricht).
- WARDA 1. 1983. Report of the First External Management Review of the West Africa Rice Development Association (WARDA). Washington, D.C.: CGIAR Secretariat. (Laurence Stifel, Emile Vanlommel).
- WARDA mid-term. 1986. Draft Report of the Mid-Term Review of the West Africa Rice Development Association (WARDA). Washington, D.C.: CGIAR Secretariat. (E.T. York, A. Blumenschein, E.Q. Javier, A. Sawadogo, D. Sindiren, W. von Urff, John Monyo, Selcuk Ozgediz).

External Program Reviews

CIAT EPR 3. 1989. Report of the Third External Programme Review of the Centro Internacional de Agricultura Tropical (CIAT). Rome: TAC Secretariat.

CIMMYT EPR 3. 1988. Report of the Third External Programme Review of the Centro Internacional de Mejoramiento de Maiz y Trigo (CIMMYT). Rome: TAC Secretariat.

CIP EPR 3. 1989. Report of the Third External Programme Review of the Centro Internacional de la Papa (CIP). Rome: TAC Secretariat.

ICARDA EPR 2. 1988. Report of the Second External Programme Review of the International Center for Agricultural Research in the Dry Areas (ICARDA). Rome: TAC Secretariat.

IITA EPR 3. 1990. Report of the Third External Programme Review of the International Institute of Tropical Agriculture (IITA). Rome: TAC Secretariat.

IRRI EPR 3. 1987. Report of the Third External Programme Review of the International Rice Research Institute (IRRI). Rome: TAC Secretariat.

ANNEX 4. DETAILED DESCRIPTION OF THE CONCEPTUAL FRAMEWORK

This paper is about the management effectiveness of CGIAR centers. The term "effectiveness" is used here in its dictionary sense: the extent to which a center is producing desired results. "Management effectiveness" refers to the way the center is managed and if the systems, processes and practices of management are conducive to production of desired results.

The centers' overall effectiveness (or organizational performance) is not discussed. Nor is the appropriateness of each center's programs for achieving the desired results. These are covered in studies of impact and program effectiveness carried out by the centers themselves and by the external program review (EPR) panels. Thus, using systems analysis language, the focus of the paper is on the inputs and the transformation processes, not on the outputs.

Not being able to study the statistical cause-effect links between the management variables (covering inputs and transformation processes) and outputs for the system as a whole is a clear but unavoidable shortcoming of the study. Although these links are implicitly taken into account in each EMR (because the EMRs and the EPRs are conducted simultaneously and with close interaction between the two panels), the analyses presented in both the EPRs and the EMRs are highly qualitative and do not lend themselves to statistical analysis tying management variables to outputs, without a host of heroic assumptions. Also, the nature of the work of the centers belies simple input-output analysis. One implication of these is that efficiency of the centers cannot be reliably expressed in terms of output per unit of input.

How does one study, then, the conduciveness of a center's management systems, processes and practices to its overall effectiveness, without explicitly considering output indicators? Two approaches are possible:

- Actual management practices in a broad range of areas can be compared with a set of desirable system-wide norms, to identify strengths and weaknesses; or,
- The centers can be studied in terms of a small set of management variables shown in the management literature to be of high significance in overall organizational performance.

Rigid application of the first approach introduces the risk of using one management blueprint for all centers. By contrast, the second approach is more efficient. But there is no single generally accepted paradigm in the management literature that is applicable to all types of organizations. There are many schools of thought (such as on scientific management, human relations,

decisionmaking, organization development, strategic management, contingency theory, microeconomics, organizational culture, entrepreneurship development, etc.), each with its own prescriptions on successful management. A few frameworks, however, cross over the boundaries of various schools and are more useful for the purposes of studying the CGIAR centers.

The approach taken in most of the EMRs and in this paper is a combination of the above two. First, a conceptual framework is drawn to identify management variables of importance to the centers and to illustrate the relationships among them. Individual EMRs do not describe the conceptual framework, but the analysis in the reports reflects the underlying framework. Second, each variable and cluster of variables is used to discuss the strengths and weaknesses of the centers and the implications of these for the centers' organizational performance.

A4.1 Alternative Conceptual Schemes

The conceptual framework used for gauging the centers' management effectiveness is illustrated in Figure 1 in Chapter 1 of the text. Before describing its components, it would be useful to mention briefly the management variables that have been singled out in other frameworks developed for similar purposes. Six such models are of relevance.

The first and perhaps the most popular scheme is the so-called "McKinsey 7-S Framework" reported by Peters and Waterman (1982) and Pascale and Athos (1982). The seven Ss refer to:

- Structure,
- Strategy,
- Systems,
- Skills,
- Staff,
- Style, and
- Shared values.

Three of the Ss (strategy, structure and systems) relate to the "hardware" of organizations. The rest cover their "software." Pascale and Athos view each of the variables as a lever at the disposal of a manager. The important point is the fit among the variables, which successful managers ensure.

The second useful model is the organization assessment framework developed by Andrew Van de Ven and his colleagues in the course of The Organization Assessment Research Program which started in 1972 (Van de Ven and Ferry, 1980). The resulting framework, perhaps the most comprehensive of all such models, has four major analytical foci:

- Macroorganization,
- Organizational unit or group,
- Individual job or position, and
- Relations within and between units.

The framework identifies contextual, design and output indicators at the three levels (individual, group and organization) and examines relations in terms of flow of resources and information and coordination and control mechanisms. The number of management variables examined is extensive as is the effort required to implement the assessment model. Although it is not highly practical to implement, the Van de Ven model is conceptually sound.

The third framework is that of Gerard Egan (1988), who has been involved with several management training efforts within the CGIAR, and is simply called "Model A." Model A has four major parts and includes the following elements:

- Business dimensions
 - strategic business elements (markets, customers, clients; business environment; mission; business philosophy; major business categories; basic financing; strategic plan)
 - operational business elements (products/services; work programs; material resources; unit performance plan)
- Organizational dimensions (structure and the division of labor; competence; teamwork; communication; reward system; individual performance plans)
- Management and leadership, and
- Managing the shadow side of the organization (the natural messiness of organizations; individual differences; the organization as a social system; the organization as a political system; organizational culture).

The fourth framework is that of Samuel Paul (1982), developed in the context of his study of successful development programs. Paul argues that organizational performance depends on the joint influence of four sets of variables related to the institution's:

- Environment (scope, diversity, uncertainty, opportunities, constraints),
- Strategy (service-beneficiary sequence, demand-supply-resource mobilization),
- Structure (decentralization, organizational autonomy), and
- Processes (participation, monitoring, human resource development, motivation).

The fifth and sixth frameworks examine institutions in terms of organizational change. Tichy (1983) regards strategic change as technical, political and cultural problem solving through selective use of the following "change levers":

- Interface with the external environment,
- Mission/strategy,
- Tasks,
- People,
- Organizational processes (communication, problem solving and decision-making),
- Prescribed networks of communication and authority, and
- Emergent networks for informal communication and influence.

Kilmann (1989), on the other hand, proposes study of five "tracks" for identification and removal of barriers to organizational success:

- Culture,
- Management skills,
- Team-building,
- Strategy-structure, and
- Reward systems.

Each of these frameworks is relevant to studying the management effectiveness of the centers. In fact, there is considerable overlap between them in terms of management variables considered to be important. This is as expected, because the models reflect different templates applied to the same phenomenon. Thus, all six models emphasize the importance of strategy and structure. The organization's fit with the environment (the contextual setting) is recognized by all, but treated more explicitly by Paul, van de Ven and Tichy. Similarly, the 7-S framework, Model A and Kilmann recognize more explicitly the soft side of organizations (values, culture, people management, etc.)

Two conclusions may be drawn from these six models. First, the interactive effect of the variables on performance is perhaps more important than the effect of any single variable. This is exemplified by Paul's characterization of strategic management as "orchestration of congruence" among strategy, structure, processes and environment (Paul, 1982, p. 103).

Second, and related to the first, none of the six models establishes priorities among key management variables in terms of their relative degree of contribution to overall performance. The Van de Ven framework has the greatest potential for the empirical analysis required for such assessment, but even this model is likely to yield different results in different organizations (or over time in the same organization). Thus, no generalizations can be made with a reasonable degree of confidence on the precise causal path between the independent and the dependent variables or on the nature of the interactions among the explanatory variables.

A4.2 Description of the Conceptual Framework

The conceptual framework used in this study differs from the six models reviewed above in one important respect: it recognizes more explicitly, and therefore puts greater emphasis on, some of the special circumstances and peculiar characteristics of the CGIAR centers. These include the following:

- The CGIAR centers are international institutions operating in many developing countries and are staffed by persons with different cultural backgrounds. This introduces complexities in managing people and coordinating activities not found in organizations in single, mono-culture environments. Guiding values and principles and leadership play important roles in integrating diversity and channeling efforts towards desired goals.

- The centers are autonomous in their management, but are subjected to oversight by the CGIAR. The demands for transparency of operations, justification of activities and spending plans, and for accountability are considerable, and increasing. To operate successfully in this environment, the centers need strong capabilities in strategic and operational planning and budgeting and good skills in managing their relationships within the CGIAR.
- The centers have a unique governance system, unlike that found in other non-profit organizations. The boards have policy-formulation and oversight responsibilities similar to those found in other organizations, but their modes of operation are different. Board effectiveness is an important requirement for successful center management, not least because the System places priority on self accountability of autonomous institutions (that is, in addition to System-imposed mechanisms for ensuring accountability).
- In strictest terms, the centers have only a one year "lease on life" because their funding is determined on a year-to-year basis. Also, their funding comes from a number of bilateral sources, necessitating constant (and vigilant) attention to donor and public relations.
- The main business of the centers is research. To be successful, they need an institutional environment conducive to innovation and creativity. Coordination and communication structures and management practices need to reinforce the conduct of innovative research. Scientists placed in management positions need to have appropriate skills for motivating and coordinating the work of others. As most research conducted is interdisciplinary, scientists need to work effectively in teams.
- Last, but not least, most of the centers operate in very difficult socio-political environments. Also, high quality physical and administrative infrastructures that are often taken for granted in developed countries do not exist in most of the countries in which the centers work. These conditions place demands on a center to operate a self-sufficient physical plant and administrative machinery and to nurture and maintain close relations with the institutions in its host country.

The variables in the framework were selected in order to take into account these special characteristics of the CGIAR

centers. In addition, the framework has evolved during the course of the management reviews themselves. At the same time, practically all of the variables in the framework are included in one or more of the models reviewed above.

Like the other models, the framework has served essentially as a template. Successive management review panels have used it as a guide (rather than a blueprint) during the various stages in its development. Relative importance of the variables and the interactions among them have been addressed by the panels on a subjective basis, instead of having been prescribed as a part of the framework.

The framework illustrated in Figure 1 has five interrelated components, each focusing on an aspect of management systems, processes and practices used by the center:

- Center guidance,
- Management of resources,
- Management of tasks,
- Institutional environment and
- Management skills and teamwork.

Center guidance. Guidance means giving purpose and direction to the center and setting the broad policies that shape its activities. This component relates to the "macro" aspects of management and plays a key role in the framework as it influences all other components.

Four major factors or elements of center guidance are explicitly recognized: guiding values, governance, leadership and strategy. These refer to the following:

- **Guiding values** reflect the broad philosophy of the institution and illustrate the principles it stands for. They are a part of the center's organizational culture. They are also embedded in the center's strategy. When the chips are down, the center makes its decisions on the basis of these values, that is the values serve as decision criteria. Values are deeply held beliefs and could cover such areas as the center's service philosophy (to its clients), view of relations with other stakeholders (e.g., openness, transparency, mutual respect), view of its staff ("staff are our greatest resource"), beliefs on use of resources (frugality, efficiency or risk taking), commitment to certain approaches to research (networking, farming systems), etc.

- **Governance** relates to the work of the center's board of trustees. The board's effectiveness in formulating policy, providing oversight, appointing the chief executive officer and maintaining productive relations with him/her, and managing its own business are all important to the way the center is guided.
- The term **leadership** is used here as in Kotter (1988): to create an agenda for change and build a strong implementation network for realizing the change. This includes creating visions, formulating strategies, building support for the visions and strategies, and building and motivating a core group of people who are prepared to and can implement the strategy. Thus, effective leadership is seen as a process and not as a function only of the chief executive officer. The board can play an important role in center leadership, as can the senior staff. Effective center performance demands leadership from all who are in a position to generate visions for the center or for its component units and can orchestrate their implementation.
- The center's **strategy** "describes the most desirable vision of its future, outlines the essential elements of a course it intends to follow to realize that vision, and provides a justification for the identified course" (Ozgediz, 1988). Strategy is one outcome of effective leadership. It clarifies the center's mission in the light of the needs of its clients and beneficiaries, its own strengths and weaknesses and likely changes in its external environment. It also clarifies its guiding values, the main "businesses" the center is/should be in, the approaches it should use to produce its products and services, and the priorities it should assign to its various future activities. In a sense, the strategy provides the main justification for the center's continued existence.

There is considerable overlap among these four factors. Individually, each has a potential to influence what goes on in a center. Also, they substitute for each other when one or more of them is weak. Weak governance does not necessarily imply weak guidance, because strong leadership can compensate for the vacuum in effective policy formulation (but not oversight). Similarly, the center may not have a clearly articulated strategy, but a strong set of guiding values may provide much of the necessary guidance. Weakness in two or more factors, though, may signal an ineffective center guidance mechanism.

Management of resources. Like in other organizations, the centers acquire and manage four types of resources: human, financial, physical and information. These are the primary inputs the center uses to generate desired outputs. (The effects of the

environment on the center can also be viewed as an input, but the center does not "manage" the environment in the same sense it does its human, financial, physical and information resources; the center manages only its relationships with the environment.)

The nature of the inputs required for effective performance depend on the center's strategy and the requirements of its specific activities. For this reason, this component is heavily influenced by the other major components of the framework. The following is a brief overview of the factors that make up the center's resources.

- It is a cliché, but **human resources** are the greatest asset of the centers. Excellence in research depends almost exclusively on excellence in people. Attracting and retaining international and local staff of the highest calibre is a goal of every center. Compensation, personnel and career development policies and procedures of the centers affect staff productivity and morale. Overstaffing leads to inefficiency, and excess turnover signals organizational weaknesses. Effective management of the centers' human resource function is important, both because salaries and benefits constitute the largest share of the centers' expenditures and because human resource management policies and practices can facilitate linking the center's strategy to the day-to-day activities of its staff.
- Effective management of **financial resources** is important in any organization, but is particularly so in the centers because of the CGIAR's unique funding system which introduces some degree of uncertainty for the centers. The centers need to secure the resources required to implement their strategies in a manner that will not fragment their activities and jeopardize the integrity of their program plans. They also need to manage the resources they have obtained efficiently, with strict adherence to generally accepted accounting and financial management norms, both at their headquarters and field offices.
- Separate attention to the management of **physical resources** is necessary because most of the centers operate in environments where they need to provide most, if not all, the services required for maintaining a physical plant and meeting the equipment and supply needs of the staff. Effectiveness of the centers' administrative machinery is important because inefficiencies here can lead to delays in product design or delivery. Also, the administrative procedures used need to reinforce the creation of an environment conducive to innovation.

- **Information** is singled out as a resource because the main businesses of the centers (such as research, training and publication) are all information-intensive. The centers acquire, generate and manage the information they need for decisionmaking, communication and for integration of their activities. Their success in this area depends to a large extent on the effectiveness of their information infrastructure and on their systems and processes for transforming information inputs into useful outputs for internal and external clients.

Effectiveness of the systems, policies and procedures for managing these four resources reflects the strength of a center's institutional infrastructure. A weak infrastructure is detrimental to program performance. A strong infrastructure facilitates high performance and can enable a center to introduce and implement programmatic changes more easily.

Management of tasks. This component is concerned with how a center transforms its strategy into tasks (or programs and activities), utilizing the resources at its disposal. The title of the component is somewhat misleading, as the focus is less on the day-to-day management of activities, and more on how the center manages the task environment. The "tasks" covered by this component are geared towards the main outputs of the center, upon which the center's effectiveness depends.

Four specific factors are identified: operational plans, coordination and communication structure, control systems and work processes. These refer to the following:

- **Operational plans** serve as a bridge between the center's strategy and the activities carried out by staff. Four types of plans are relevant: medium-term (with a perspective of about five years), annual, unit and individual. With the inclusion of strategic planning (which is covered above as a component of Center Guidance), these five types of plans help ensure that the work of every staff member is connected to the center's strategy, and that the tasks undertaken are integrated with each other. Operational plans also help provide a framework for the center to assess its own performance through various review mechanisms.
- **Control systems** generate monitoring and review information on the implementation of the center's strategic and operational plans. This information enables the center to change course or to take corrective action. The output of this factor, therefore, is an input to the center's strategic and operational planning efforts. External reviews of the center are an integral component of the center's

control systems, as is the oversight provided by the board of trustees.

- The center's **organizational structure** shows not only the allocation of authority (through reporting relationships), it also illustrates how the center differentiates the many activities identified in its plans (division of labor through program units) and coordinates them (through supervision, committees, liaison persons, etc.). The center's organizational structure follows from its strategy and illustrates the coordination and communication mechanisms chosen for implementing the strategy. The fit of the structure to the strategy is important, as is the suitability of the structure for conducting research. Also, understanding the differences between formal and informal structures is important for assessing structural barriers to performance. Thus, structure shows the "form" within which "function" takes place at the centers.
- The last factor in this component is **work processes** used for transforming inputs into outputs. Plans, control systems and structure help define the tasks and the responsibilities of staff and help assess results. Work processes cover the techniques of production and relate to the appropriateness of research and research-related processes such as data collection, analysis, testing, field work, training, information dissemination, etc. The importance of the appropriateness of these processes is explicitly recognized in the framework to strengthen its logical integrity, although this subject is covered almost exclusively by the EPRs rather than the EMRs.

These four factors define the essential technical aspects of managing the task environment in a center. Actual task performance depends on the quality of this environment and the quality and appropriateness of the inputs, guidance, external relations and the last component of the framework: management skills and teamwork.

Institutional environment. The diagram in Figure 1 illustrates the enveloping nature of the center's environment. The center's relations with its institutional environment are seen as bi-directional, that is, the center is influenced by and exerts an influence on its environment. The center's institutional environment is made up of its key external stakeholders.

Four groups of stakeholders are explicitly recognized: clients/partners, the donor community and the CGIAR, other research institutions with which the center has (or can potentially have) collaborative or competitive relationships and

institutions and individuals in the host country which can influence the center's work or have a stake in its accomplishments. A key assumption is that, to be effective, the center has to take advantage of the opportunities offered by its environment and manage the threats presented. This requires a proactive approach to managing external relations, with reliable and timely information about changes in the environment, and widely shared values on the center's role vis-a-vis each major stakeholder (such as service to clients, transparent relations with donors, etc.). The latter (i.e., having widely shared values) is particularly important because all members of the institution, not just top managers, interact with stakeholders that constitute the institutional environment.

Management skills and teamwork. Management involves, in the first instance, getting things done by other people. Managers and supervisors in a center direct others, delegate authority and responsibility, set goals, plan the work of their units, organize staff, coordinate activities, solve problems, support the work of their subordinates, review performance and motivate and provide feedback to their staff, and communicate with superiors, peers and subordinates. Performing these managerial tasks effectively requires skills which are generally referred to as management skills. These skills are not normally acquired during a person's formal education. Each senior staff member in a center plays some managerial role, either as the head of an organizational unit or the manager of a team (such as a project team). A manager's ability to get his/her unit or team to produce results in an efficient manner is an important determinant of the organization's overall effectiveness.

Effective managers successfully generate a spirit of teamwork in their units. However, as the work of the centers is mostly inter-disciplinary, a team spirit needs to be developed across the whole institution. The integrity of the center's strategy can be maintained if individuals and groups know their own and others' roles, and work in a mutually supportive fashion. Although the precise contribution of teamwork to overall organizational effectiveness cannot be measured, there are many examples of how absence of teamwork can lead to poor performance (Egan, 1988, pp.145-152).

Crosscutting organizational attributes. The framework described above provides a template for studying the centers and diagnosing management-related strengths and weaknesses. However, it does not explicitly consider organization-wide attributes which derive from good management of the various components and factors. These attributes are desirable institutional features and, conceptually, are affected by many of the factors identified in the framework. The list of attributes varies across institutions. In the case of the CGIAR centers, the following four are frequently mentioned (by the centers themselves and the

CGIAR) as desirable characteristics: adaptability, accountability, efficiency and innovation.

- **Adaptability** refers to the center's ability to respond to changing circumstances. The flexibility in responding to changing client needs is an important aspect of adaptability, as is the ability to modify the center's programs in the light of changing CGIAR or donor requirements or funding circumstances. The center's guiding values, strategy, organizational structure and administrative machinery may all influence its overall adaptability.
- **Accountability** refers to the extent to which the center's management systems and processes reinforce individual, unit and center-wide accountability for results. Oversight by the boards is one mechanism for reinforcing accountability. Others include internal reviews, performance assessment of staff and internal and external audits.
- **Efficiency** relates to value for money. The donors funding the centers are interested in getting maximum results from their contributions. Without a precise and measurable definition of center outputs, it is difficult to assess efficiency in terms of output per unit of input. However, it is possible to assess the efficiency orientation of a center in terms of its guiding values and the orientation of the board, management and staff towards resource utilization.
- **Innovation** refers to the conduciveness of a center's internal environment to creativity. A tight control-oriented approach to management may hamper innovation. Excessive concern for accountability and efficiency could also work against innovation. Guiding values, leadership, organizational structure, management practices and teamwork all influence the potential to innovate in a center.

I have not included "absence of bureaucracy" in the above list of desirable organizational attributes because the four attributes identified provide a sufficient coverage of subjects that would need to be treated under the bureaucracy heading.

A4.3 Logic of the Conceptual Framework

As noted earlier, the components and factors identified in Figure 1 each have a bearing on a center's overall effectiveness. However, the factors identified are not independent of each other; they are influenced by and exert an influence on other factors. The precise causal path of relationships is not known.

If I speculate on causal relationships, a plausible configuration might look like the diagram shown in Figure 2.

Figure 2 implies several broad generalizations about the relationships among the components of the framework. First, it suggests that the major "driving forces" of the framework are environment and guidance. Taken together, these two components show how successfully the center is able to take stock of the changes in its environment on a continuous basis and modify its strategy and policies. Environment and guidance influence all other components.

Second, the way resources are managed does not have a direct effect on outputs. Resources represent inputs and their effect on outputs is through other variables, in particular the way programs and tasks are managed. Resource management is influenced by the task environment as the latter provides the main parameters for the resources needed.

Third, management skills and teamwork are intervening variables. The emphasis a center puts on management development is a policy question, influenced by the factors which make up center guidance and human resource management practices. Teamwork is influenced by these same factors as well as the design of the task environment (particularly organizational structure). Management practices and teamwork affect the way both the resources and the tasks are managed.

Fourth, the center's output (products and services) is influenced primarily by the way programs and tasks are designed and implemented (task management). All other factors influence outputs through their effects on task management.

What I have called crosscutting organizational attributes are descriptions of a center in terms of some desirable characteristics. The four attributes identified (adaptability, accountability, efficiency and innovation) represent my impression of what is desirable in the CGIAR. In this sense, they could be regarded as organizational goals. When explicitly stated as goals supplementing the output or product/service oriented goals, they need to be taken into account in assessment of overall organizational performance. Figure 2 recognizes the crosscutting nature of these attributes by showing them as being derivatives of good management of the five components.

Potential to perform is a concept relating to the capacity of the organization to produce desired results in the future, i.e., whether it has the institutional ingredients for sustained successful performance. A center that is doing well on all five components and the four organizational attributes has a stronger chance to produce good programmatic results in the future than one that is not doing so well. Viewed this way, then, the framework provides a way of comparing actual indicators of

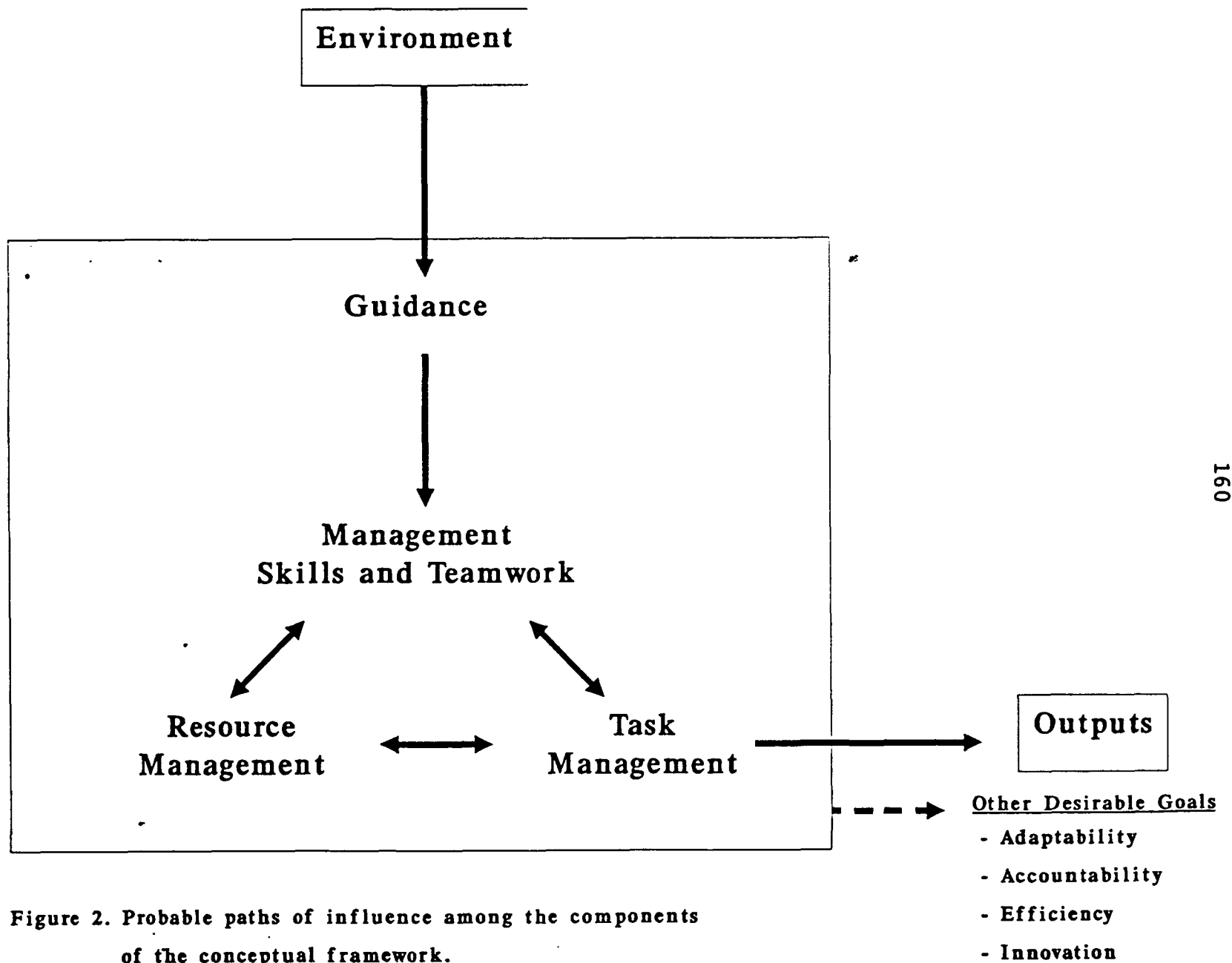


Figure 2. Probable paths of influence among the components of the conceptual framework.

performance (expressed in output terms) with expected performance based on institutional criteria.

It could be argued that all that counts in organizations is actual performance expressed in impact and output terms and that if a center is producing good results there is no need to examine its management effectiveness because performance would not be there without the right institutional ingredients. This is true if one takes a static view of organizational performance. However, if the interest is on sustainability of performance, the organization's potential to perform should be studied. Furthermore, an actual level of performance that appears high on objective measures of effectiveness can perhaps be increased further if analysis of management factors shows that there would be room for even higher performance if some of the institutional barriers were removed.

The conceptual framework described here is geared toward studying the center as a whole. However, the framework can be useful also as a template for studying units within an institution. In fact, I have approached the study of boards (in Chapter 2) by applying the framework (with proper interpretation of the components and factors) to the way in which boards manage their own affairs.

Like all similar models, this framework serves mainly a heuristic purpose. Its validity is not tested statistically, but it has some construct validity (in the sense of providing a common sense explanation of the interrelationships); and the EMRs provide some empirical justification of its relevance to the study of the CGIAR centers. The framework will be fine tuned as more is learned about what makes the CGIAR centers "tick" as well as they do.

ANNEX 5. DRAFT TERMS OF REFERENCE FOR EXTERNAL MANAGEMENT REVIEW PANELS

Background

A system of periodic External Management Reviews (EMRs) of international agricultural research centers was initiated by the CGIAR in 1982 following the recommendations of the Second Review of the CGIAR. The Group assigned the responsibility for organizing the EMRs to its Secretariat. All external reviews of CGIAR centers conducted since 1982 have had a management review component complementing the External Program Review (EPR) that is conducted by or on behalf of the Technical Advisory Committee (TAC).

In 1988, TAC and the CGIAR Secretariat conducted a study of the CGIAR's review processes. The recommendations of this study were discussed and endorsed by the CGIAR at its annual meeting in October 1988. This study provides the policy and principle framework within which different types of reviews are to be conducted within the CGIAR. Accordingly, external reviews of the centers will continue to have an EPR and an EMR component that are concurrently conducted about every five years by two small panels. The panels are expected to work closely with each other and produce separate, but well integrated reports.

The CGIAR Secretariat commissions an external panel to conduct the EMR and provides backstopping to the panel as necessary. The Secretariat forwards the report of the panel first to TAC, for it to consider along with the EPR, and next to the CGIAR for discussion and decision. The center, TAC or the CGIAR may endorse or disagree with all or some of the recommendations of the EMR panel.

Purpose of the EMRs

The overall purpose of the EMRs is to assess the center's present and potential future management effectiveness. Here, management effectiveness refers broadly to the center's success in performing essential management functions, such as setting goals, selecting strategies, providing leadership, acquiring and managing resources, planning and implementing activities, etc. The EMR is also concerned with management efficiency, i.e., whether the center's management practices encourage efficient utilization of human, financial, physical and information resources. Thus, the main focus of the EMRs is on management factors that enhance or limit the center's overall performance. The specific objectives of the EMRs are:

- To provide the Group with a broad gauged assessment of how effectively the center is being managed and on

actions that could improve the center's performance in the future;

- To provide the board of trustees and the management of the center advice on improving management effectiveness and efficiency, both formally through the report and on an informal basis;
- To identify particularly effective management practices at one center that may have broader application in the System;
- To identify practices of donors, TAC and the CGIAR Secretariat that have particularly positive or negative influences on the center's efficiency, and where appropriate, to suggest constructive change.

Conduct of the EMR

The mandate of the EMR panel is to carry out a frank, objective and independent assessment of the center's management effectiveness in a manner to accomplish the purpose and objectives of the EMRs noted above. The panel should collaborate closely with the EPR panel throughout its work. It should carry out its work in an atmosphere of open dialogue and fruitful exchange with the center board, management and staff.

The panel's assessment should cover the broad topics outlined below and the appended list of questions.

- Center Guidance

Overall effectiveness of the Board of Trustees in governing the center.

Conduciveness to performance of the center's guiding values and culture.

Effectiveness of leadership throughout the center.

Appropriateness of the center's strategic planning process.

- Management of Resources

Effectiveness of the center's human resource management systems, policies and procedures.

Effectiveness of financial management and control systems, policies and procedures.

Appropriateness of administrative policies and procedures.

The center's success in obtaining and managing information necessary for decisionmaking.

The center's efficiency in utilizing human, financial, physical and information resources.

- Management of Programs

Appropriateness of the center's operational planning processes.

Appropriateness of the center's internal control and review processes.

Appropriateness of the center's organizational structure and internal communication mechanisms.

Appropriateness of the processes the center uses for managing tasks in program units.

- Management of Relations with the Center's Environment

The center's skills in managing its relations with:

- its clients;
- its host country;
- other research institutions in developed and developing countries (including other CGIAR centers); and
- donors, the CGIAR and TAC.

- Management Skills and Teamwork

Management skills of staff in management and supervisory positions.

Success of the center in team-building and effective teamwork.

The panel is not expected to address each topic listed above or in the appended list of questions in equal depth. The panel is expected to focus its analysis on factors it regards important in improving the center's performance. This would normally follow a comprehensive diagnostic study of the topics listed plus others the panel regards as potentially significant.

The EMR Report

The panel is expected to present its analysis, conclusions and recommendations in a report addressed to the Executive Secretary of the CGIAR. The report should be short (less than 50 single spaced pages) and written in plain language. Supporting material can be presented in annexes or in an accompanying volume.

Portions of the report addressing research and program management issues should be prepared jointly with the EPR panel. This chapter or chapters should appear in both reports essentially in identical form.

The EMR report should be completed at the center during the main phase of the review and formally presented to the center's board of trustees before the panel's departure from the center.

In addition to the report it forwards to the CGIAR, the panel may write one or more confidential reports or letters covering sensitive and potentially damaging matters. These would normally be addressed to the board chairperson and/or the center director. If such confidential reports are prepared, the CGIAR and TAC chairpersons should be informed of their content.

Attachment (List of Questions)

CGIAR Secretariat
September 1989

List of Questions

External Management Review

A. Overall Assessment

1. Do management systems, policies and practices at the center lead to effective program performance? Do they foster innovation and creativity?
2. To what extent are efficiency and accountability reinforced throughout the center?
3. How satisfied are staff at all levels with their jobs? How are morale, trust, communication and teamwork perceived among the staff?
4. What is the attitude of the center board and management toward organizational development and change? Does the center have effective internal management review mechanisms?
5. Has the center responded adequately to the recommendations of the last EMR?

B. Center Guidance**a. Guiding Values and Culture**

1. What principal guiding values/philosophies appear to shape the actions of the board, management and staff? Are they conducive to high performance?
2. What are the main features of the center's current organizational culture? Do aspects of culture serve as barriers to performance?
3. How well do the center's strategy, structure and management practices fit its organizational culture?

b. Legal Status and Governance

1. How effective is the board in policy and strategy formulation?
2. How effective is the board in policy and strategy oversight?
3. How effective is the board in managing its business (selecting and developing members, board and committee leadership, committee structure, board procedures, managing meetings, teamwork, etc.)?

4. Is the relationship between the board and the management healthy?
5. Is the center's legal status appropriate for carrying out its mission effectively?

c. Leadership and Senior Management

1. How effectively has the center been led by the director general and his top management team since the last EMR?
2. How well do senior managers work as a team?
3. How effectively do senior managers balance demands on their time from external and internal stakeholders?

d. Strategic Planning

1. How effective is the strategic planning process used by the center? What lessons can be drawn for other centers conducting strategic planning?
2. Has the center effectively addressed the management implications of the center's strategy?

C. Management of Resources

a. Human Resources

1. Has the center been able to attract and retain international and local staff of the highest calibre?
2. What policies and practices govern the length of tenure of senior staff? Is the turnover rate sufficient for ensuring program continuity and undertaking new initiatives?
3. Is there over or understaffing for any category of staff? What measures should be taken to prevent over or understaffing?
4. Are compensation policies (classification, grading, salaries and benefits) for international and local staff, including those stationed outside the headquarters, appropriate? Are they effectively enforced?
5. Are personnel policies (recruitment and orientation, performance planning and assessment, spouse employment, retirement, etc.) for international and local staff, including those stationed outside the headquarters, appropriate? Are they effectively enforced?

6. Are career development policies (management development, professional training, study leaves and sabbaticals, secondments) for international and local staff, including those stationed outside the headquarters, appropriate?
7. Does the center actively promote recruitment, retention and career development of women? Are there barriers to women's advancement in the center?
8. How effectively is the human resource management function managed? Are the staffing and organization of the human resource units appropriate?

b. Finance

1. How successful has the center been in securing resources to finance its activities? How stable is the center's funding base? Does the center have a fundraising strategy? How effectively is the fundraising process managed?
2. Have special project and restricted core funding led to fragmentation of activities? How limiting are the conditions attached to restricted contributions?
3. How effective are the mechanisms and processes used for financial management of headquarters and field activities, including financial planning, accounting, budgeting, internal and external auditing, financial analysis and reporting, cash and currency management, and control?
4. How strongly is financial management linked with program management? How much financial responsibility do the individual scientists have? Does the system encourage individuals to spend center funds prudently?
5. How well is the financial management function managed? Are the staffing and organization appropriate?

c. Administration

1. How successful has the center been in establishing an administrative infrastructure that meets the needs of staff in an efficient and effective manner? Are senior staff excessively burdened by administrative procedures?
2. How cost effective are the systems and policies used for managing:
 - procurement operations (foreign and local purchasing, receiving, stores);

- general services (security, housing and dormitories, food services, transport, travel services);
 - construction and property management and maintenance;
 - insurance?
3. How well are the administrative services managed? Are the staffing and organization appropriate?

d. Information

1. How successful is the center in acquiring, generating and managing the information it needs for decisionmaking, communication and integration of activities?
2. How effectively are information services and technology (computing, telecommunications, office automation, records management, archives, library and documentation) managed?
3. Are information services and technology plans integrated with the center's strategic plan?
4. How effective are the center's management and governance information systems?

D. Management of Programs

a. Organizational Structure

1. What pattern of internal organizational structure exists on paper? What is the perceived pattern? What are the reporting relationships? What coordination mechanisms are used? What are the advantages and the disadvantages of the present structural arrangement?
2. How are the regional programs and outreach staff linked with the headquarters? What mechanisms are used for coordination across programs? Are these effective? Does the current structure enable the center to have an effective dialogue with NARS?
3. What alternative structures could serve the center well in the future in light of the center's program strategy, its organizational culture and the requirements of the new CGIAR resource allocation system?

b. Operational Planning

1. How effective is the center's short- and medium-term planning process? How well are operational plans linked with the center's strategic plan?
2. Are operational plans linked effectively with the center's resource management plans (for human, financial, physical and information resources)?

c. Internal Reviews

1. What processes does the center use to monitor progress in the implementation of its strategic and operational plans? Are these cost effective?

d. Management of Program Activities

1. How effectively are individual program and research support units managed? (The panel is not expected to conduct a detailed management audit of each organizational unit, other than the resource management units covered above. It should focus its efforts toward identifying management strengths and weaknesses shared by many program or support units.)
2. How effectively are outreach activities managed? Are outreach activities coordinated well with the activities at the headquarters?
3. To what extent is the center contracting research to outside institutions? How effective are these arrangements?

E. Relationships with the External Environment

1. How good is the fit between the center as an organization and its key external stakeholders? How successful has the center been in managing its relationships with:
 - its clients in developing countries;
 - institutions in the host country of its headquarters;
 - other research institutions in developed and developing countries (including other CGIAR centers); and
 - donors, the CGIAR and TAC?
2. How well does the center manage its relations with other stakeholders (such as the media and the general public)?

- Are the resources devoted to public relations appropriate?
- 3. Does the center review its relationships with the external stakeholders periodically? To what extent does the center's strategic planning encompass relations with stakeholders?
- 4. Are there measures the CGIAR community (donors, other centers, TAC, the CGIAR Secretariat) should take to minimize adverse effects or constraints they impose on the center?
- 5. How effectively are the center's communication, publication and distribution activities managed? Are these activities carried out in a cost effective manner?

F. Management Skills and Teamwork

1. How successful are managers and supervisors in managing people and tasks under the constraints the center operates within? In particular, how skillful are managers and supervisors in:
 - goal setting and work planning;
 - selecting and developing staff;
 - organizing and coordinating;
 - directing/delegating;
 - supporting the work of subordinates and problem solving;
 - reviewing and providing feedback;
 - rewarding and motivating;
 - communicating effectively?
2. Do staff work effectively in teams? Is there a widely shared spirit of teamwork in interpersonal and intergroup relations? Do the structure and operating procedures of work groups facilitate cooperation and teamwork?

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